Confessions of an Amiga Addict

June 1989
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FOR COMMODORE AND AMIGA USERS

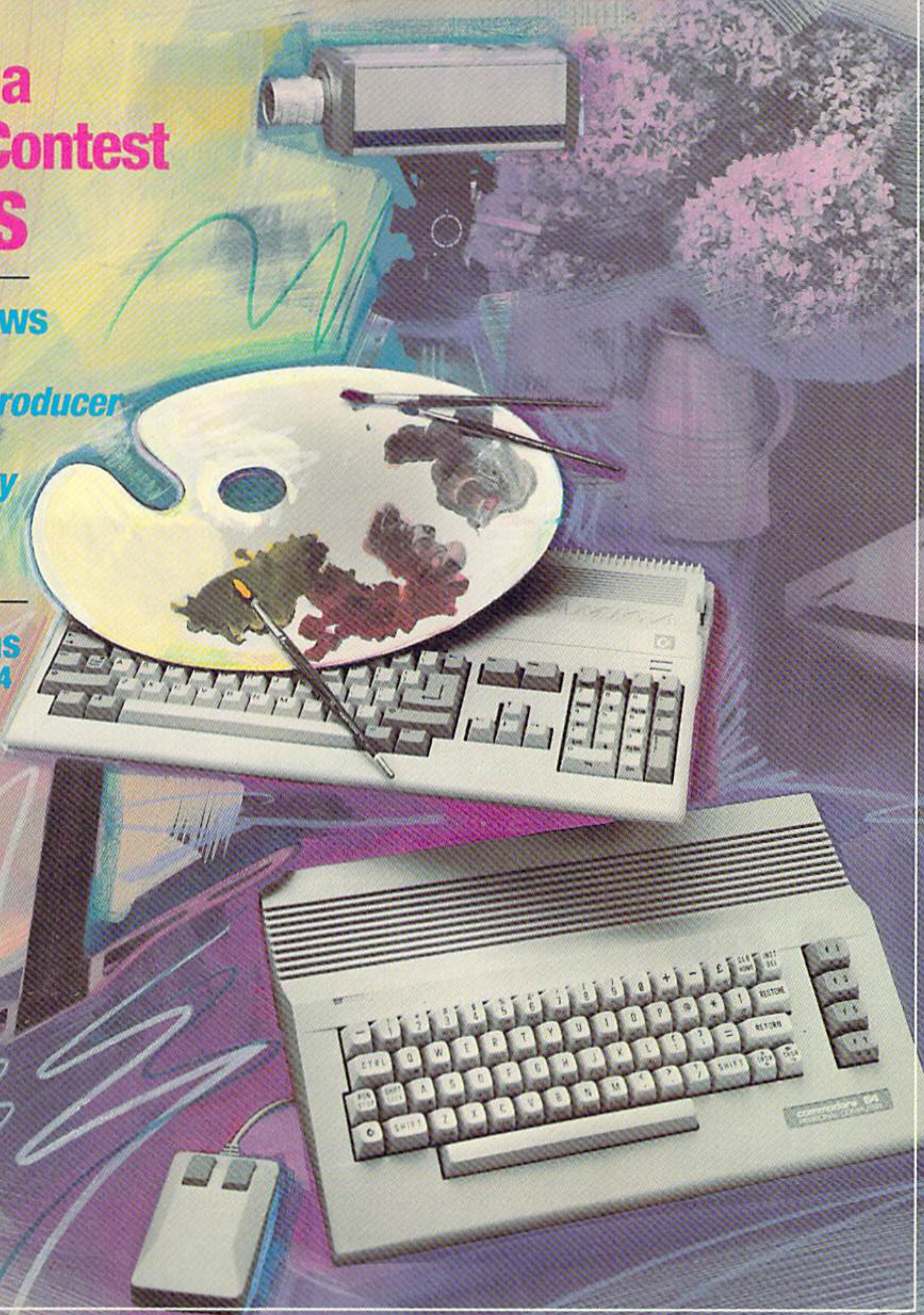
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MAGAZINE

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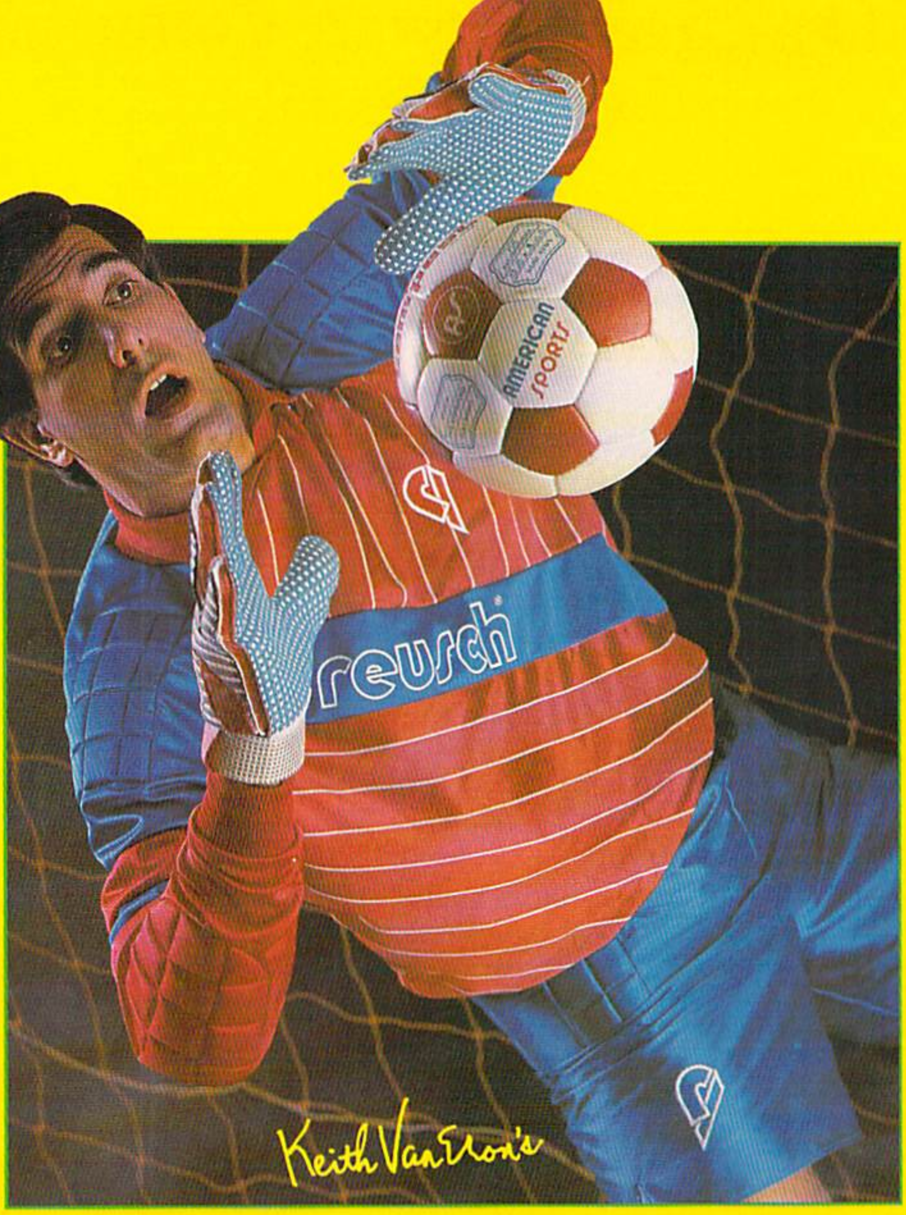
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Screens shown are from arcade version. Computer version may vary.











C-64/128 Screens Shown

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Commodore MAGAZINE

JUNE 1989, *Volume 10, Number 6*



60

FEATURES

COVER STORY

COVER PHOTO: *Charles Bartholomew*
Illustration: Jesse Hulse

REVIEWS

DEPARTMENTS

Impressive Impressions

Dear Editor:

I am writing in regard to the article "Impressions of the World of Commodore" in the March issue. I'm considering buying an Amiga 500, and was intrigued to see how one could combine computer and real images together. As an artist, I appreciate seeing the different ways a computer can be used for graphic work.

Thank you,
Louie Volpe
Long Island, NY

If you really *want to be impressed, turn to the cover story on page 50 to see what our artistic readers are doing with their computers. Then stay tuned to next month's issue when we explore the latest in Amiga desktop presentation.*

Amiga Tips Wanted

To The Editor:

Is Lou Sander's "Tips & Tricks" column open to Amiga hints? I recently upgraded to an Amiga and would love to see any helpful hints or type-in programs.

Sincerely,
Warren Grubb
Atlanta, GA

Lou accepts hints for all varieties of Commodore computers. Calling all Amiga users, got any hints for new users? If so, see page 10 to find out how to get your pointers published.

Amiga PAL

Dear *Commodore Magazine:*

Very humbly I would like to point out that the Amiga community is much larger than the reach of the NTSC standard, and the number of Amigas are growing in PAL countries too, and PAL systems are used in more than just the European countries.

So take heed, developers, manufacturers, producers, distributors, dealers, publishing companies and writers, and always take into consideration the potential and demand of the PAL market.

There should always be information about PAL compatibility in *every* Amiga-related advertisement, flier, review and package cover.

Sincerely Yours,
Jan W. Ahlfors
Helsinki, Finland

PAL systems are sold by Commodore International in Australia, Austria, Belgium, Denmark, France, Hong Kong, Italy, the Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom, and West Germany. In contrast, NTSC systems are sold through offices in Canada, Japan, Taiwan and the U.S. Amiga sales are expected to hit the magic number of one million units sold by the time you read this, and a good percentage of them are PAL systems.

COLT Conundrum

To the Editor:

I have a Commodore COLT and for some reason your magazine does not cover the Commodore MS-DOS-compatible PC's. When or if you should decide to cover the Commodore COLT and other Commodore PC-compatibles, I would subscribe to your magazine.

M. Smith
Joppa, AL

A number of readers have requested information on Commodore's line of MS-DOS compatibles. Check page 35 for the first in a series of articles covering the Commodore COLT and the Commodore Professional Series III. The first installment is an introduction to the world of MS DOS for Commodore users.

No Gutz, No Glory

To the Editor:

This is in reply to your "Buzzwords: Guide to Commodore Programmer Slang" in the February issue. Sure you had some interesting terms (which I had never in my life as a computer user heard before), but I and many of my "computer buddies" feel you have left out the most important and most frequently-used words of computer slang. Some examples are: *phreaker, cracker, importer, lamer, elite, hacker, cracking group,* etc.

What's your problem? I think that *Commodore Magazine* is in their own world and refuses to admit that these words and the people who use them even exist. I am the sysop of a BBS called the Hard Rock Cafe and think that it is necessary for all computer users, especially modemers, to know these words and their meanings.

Sincerely,
Blue Dragon
Plano, TX

P.S. Let's see if ya have the gutz to print it.

We got our glossary (words and definitions) right from the programmers' mouths. In addition to the felonious-sounding terms, maybe you can also define gutz; *it wasn't in our dictionary.*

Continued on page 78

Commodore
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BASIC 8

Free Spirit Software has announced that they will publish **BASIC 8,** the popular Commodore 128 programming environment that adds over 50 graphic commands to BASIC 7.0. Free Spirit has updated the program and added a new 200-page instruction manual. In addition, the company will market the **BASIC 8 Toolkit,** a utility program for use with **BASIC 8.** The Toolkit allows users to create custom pointers, fonts, patterns and icons. **BASIC 8** retails for $39.95; **BASIC 8 Toolkit** has a suggested retail price of $19.95. For more information contact: Free Spirit Software, 58 Noble St., P.O. Box 128, Kutztown, PA 19530. Phone: (215) 683-5609.

Sports Award Library

Now you can recognize the accomplishments of your favorite athlete with the help of **Sports Award Library** for the Commodore 64 and Amiga. The Baudville program, a supplement to their *Award Maker Plus,* contains ten new border designs, four new fonts and hundreds of pieces of sporting clip art for virtually any sport. Both male and female athletes can be honored.

Baudville will also be releasing an **Education Award Library**. The programs (which require *Award Maker Plus)* retail for $29.95 each on the Amiga; they're also available for the Commodore 64 at a price of $24.95. For details contact: Baudville, 5380 52nd Street SE, Grand Rapids, MI 49508. Or call: (616) 698-0888.



Robocop

You saw the movie, you played the coin-op game, now Data East lets you bring **Robocop** home for your Commodore 64 or Amiga. This action-adventure program follows the storyline of the movie. You are Robocop—part machine, part vigilante—and you must rescue Detroit from the forces of evil. **Robocop** for the Commodore 64 retails for $34.95; the Amiga version is priced at $44.95. For further information contact: Data East USA, 470 Needles Dr., San Jose, CA 95112. Phone: (408) 286-7074.

Robot Reader

Robot Readers, on the other hand are part machine, part storybook. Hilton Android's sixth installment in the series is the classic fairy tale, **The Three Bears (Goldilocks).** In the story, a little girl named Goldilocks—oh, you know the plot. Well, did you know that this version lets your Amiga read aloud with each word of text changing color as it is spoken? **Robot Readers** will also sound out a word letter by letter and provide audio-visual identification of the characters and objects illustrated. **The Three Bears** retails for $29.95. For more information on the Robot Readers series contact: Hilton Android, P.O. Box 7437, Huntington Beach, CA 92615. Or call: (714) 963-4584.

Elan Performer

Elan Performer's unique presentation system allow you to access Amiga graphics and animations from the keyboard without disk swapping. In addition, **Performer** will handle visuals in different formats. The program lets you control an animation's playback speed, and provides frame-by-frame, forward and reverse playback options. **Elan Performer** retails for $59.00. For details contact: Elan Design, P.O. Box 31725, San Francisco, CA 94131. Or call: (415) 621-8673.

Spotlight on Cinema-ware

Cinemaware Corporation, best known for bringing "interactive movies" to personal computers, has announced a new line of adventure, fantasy-role playing, simulation and sports games. The first three titles to be released under Cinemaware's Spotlight Software line are **Federation, Deathbringer** and **Total Eclipse.**

Federation is a space flight simulator adventure for the Amiga. Players take on 15 increasingly difficult missions in this space adventure featuring over eight million planets. **Federation** for the Amiga retails for $49.95.

Deathbringer is a fantasy role-playing game in which you play a barbarian hero who must recover five magical gems from the evil wizard who controls them. The program is available for the Amiga at a retail price of $39.95 and will be released for the Commodore 64 this fall priced at $29.95.

Total Eclipse is an adventure set in Egypt in 1930. An Egyptian curse triggered by an eclipse has caused the moon to explode. You play an archaelogist who must locate and destroy the source of the curse in an ancient tomb. **Total Eclipse** for the Amiga has a suggested retail price of $39.95, the 64 version is priced at $29.95.

For further information contact: Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362. Or call: (805) 379-9401.

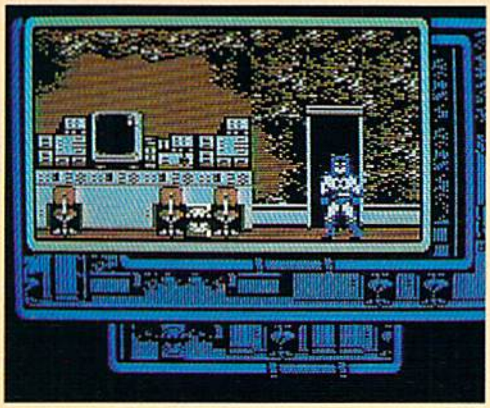
Cinemaware Sale

Cinemaware has also announced a special "Buy Two, Get One Free" offer on their Commodore 64 and Amiga software titles. Buy two Cinemaware titles by June 30, 1989 (while supplies last), and you can get a free copy of *Defender of the Crown, S.D.I., Sinbad and the Throne of the Falcon* or *The King of Chicago.* For details on the offer contact Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362. Or call: (805) 379-9401.

The Right Light

What's the proper lighting for your computer workstation? According to a recent study by General Electric, the optimal lighting should be evenly distributed over the work area and balanced with surrounding lighting. GE found the ideal set-up included a desk against a plain, light-colored, non-glossy wall. The surface of the desk should also be non-glossy to avoid distraction from reflected light.

Desk lamps should be adjusted so that the bottom of the shade is 15 inches above the work surface and should be placed to the left of a right-handed person or to the right of a left-handed person. GE found that the brighter and more diffused the light, the better. A minimum of a 150-watt bulb is recommended. For more information consumers can call the GE Answer Center at (800) 626-2000.

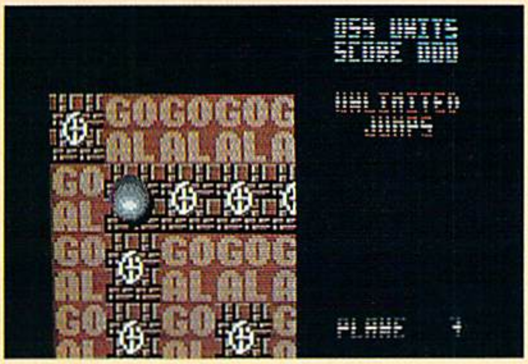


Batman, The Caped Crusader

Holy Comeback! It looks like 1989 will be the year that marks the return of Batman. Timed to coincide with the release of the movie starring Jack Nicholson and Michael Keaton and the 50th anniversary of the DC Comics character, Data East is releasing **Batman, The Caped Crusader** for the Commodore 64 and Amiga.

The program pits you and the Boy Wonder against familiar foes like the Penguin and the Joker. While the Penguin is trying to take over the world, the Joker kidnaps Robin. You must make the rounds of Gotham City on a quest to collect clues to solve the puzzle.

Batman for the Commodore 64 retails for $24.95, the Amiga price is set at $44.95. For further information contact: Data East USA, 470 Needles Dr., San Jose, CA 95112. Phone: (408) 286-7074.



Mind-Roll

Epyx has released **Mind-Roll,** a multi-dimensional arcade game for the Commodore 64 and Amiga. The game takes place on ten planes that changes every time you play. You maneuver through obstacles, along racetracks and among mazes in a race against the clock. Both versions of **Mind-Roll** are priced at $29.95. For details contact: Epyx, Inc., 600 Galveston Dr., P.O. Box 8020, Redwood City, CA 94063. Or call: (415) 368-3200.

Frame-Grabber 256

Progressive Peripherals and Software has released a new real-time Amiga video digitizer. **FrameGrabber 256** lets any standard Amiga monitor display 256 shades of gray and provides a Delta mode that allows real-time image comparisons. With a color splitter, color wheel or RGB camera, **FrameGrabber 256** can digitize static images in 16.7 million colors. **FrameGrabber 256** carries a suggested retail price of $699.95. For details contact: Progressive Peripherals and Software, 464 Kalamath St., Denver, CO 80204. Phone: (303) 825-4144.

GEOS 128 2.0

Berkeley's **GEOS 128 2.0** offers several new features to 128 users. The package includes *geoWrite 2.1, geoSpell 128,* and *geoPaint.* The new deskTop supports two disk drives (1541, 1571 or 1581) and RAM expansion; *geoMerge* allows you to do mail merge; and *TextGrabber* imports text from any Commodore word processor.

The updated program sells for $69.95; registered owners of GEOS 128 will be notified by mail with details on how to upgrade. (See next month's "Pumping GEOS" for helpful shortcuts using the upgrade.) For further information contact: Berkeley Softworks, 2150 Shattuck Avenue, Berkeley, CA 94704. Phone: (415) 644-0883.

Amiga Art

ABACI Gallery of Computer Art in association with Machlan Enterprises is compiling a book of Amiga-generated fine art. Computer artists interested in submitting art for possible inclusion should send duplicate slides (no originals accepted) to ABACI Gallery of Computer Art no later than June 30, 1989. All submissions must be original, preferably hand-drawn creations of the artist submitting the work. Each duplicate slide should include title, artist and copyright. For more information on submitting art contact: ABACI Gallery of Computer Art, 312 NW 10th, Portland OR 97209. Phone: (503) 228-8642.

GENP

Genealogy has come to the Amiga. **GENP** is a family history program for both human and animal pedigrees. The program provides three basic charts: pedigree chart—details four generations going back in time; family group sheet—used to detail information on a whole family; and descendant chart—delineates up to 24 generations from an individual going forward in time. You can store a picture (portrait, map or document) for each person or input text notations from your word processor. Most screens can be modified to display text in a language of the user's choice. For more information on the product write to: Genealogical Processing, 37 Charles St., Cheltenham, Victoria 3192, Australia.

People/Link Expands Services

American People/Link has added new services to their online network. Two new additions are DEPOT (Desktop & Electronic Publishing Online Terminal) and ACE (Accounting, Cost, Estimating). Both services are designed to open a forum for sharing information in their respective disciplines. For further information contact: American Home Network, Inc., 165 N. Canal St., Suite 950, Chicago, IL 60606. Phone: (800) 524-0100.

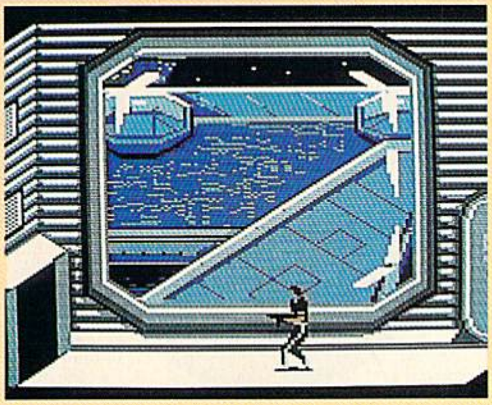
Abacus Amiga Books

Abacus has released two new books for the Amiga. **Amiga 3D Graphic Programming in BASIC,** teaches the basics of three-dimensional graphics including ray tracing, shading and light sources. The book comes with a sample slideshow disk containing IFF images that demonstrate some of the techniques outlined in the book.

More Tricks & Tips for the Amiga is a collection of techniques, hints and suggestions for Amiga users. Suggested retail price is $19.95. For more information on these and other Amiga titles contact: Abacus, 5370 52nd St., NE, Grand Rapids, MI 49508. Phone: (616) 698-0330.

Ultimate Challenge Update

MicroProse had some surprise visitors in March. Ron O'Donnel and Doug Duchesney from the Navy Submarine School in Groton, Connecticut, drove six hours to deliver their **Red Storm Rising Ultimate Challenge** high-score disks in person. Ron and Doug are both instructors at the sub school and veteran *Red Storm Rising* enthusiasts. Does their experience with real subs help while playing *Red Storm Rising?* Rumor has it that their scores are pretty good. Look for more information on the results of the **Ultimate Challenge** in upcoming issues of *Commodore Magazine.*



Project Firestart

If "science-fiction role-playing games" are your genre of choice, you'll want to pick up **Project Firestart,** Electronic Arts' latest Commodore 64 release. The program combines various horror movie effects in a storyline about a research spaceship, *Prometheus.* The ship is carrying scientists who are creating artificial creatures to work in mines on distant asteroids. The crew hasn't been heard from recently, so you must solve the mystery, rescue any survivors, retrieve the ship's log, and do whatever is necessary to get back out. **Project Firestart** has a suggested retail price of $29.95. For more information contact: Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404. Phone: (415) 571-7171.

Poster Maker 128

Free Spirit Software continues to serve Commodore 128 users with the release of **Poster Maker 128.** The program allows users to create posters from 2′ × 2′ to 5′ × 5′. **Poster Maker 128** includes a utility for importing graphics from *BASIC 8, Sketchpad 128* or *Spectrum 128.* The program requires a 128D or a 128 equipped with 1571 disk drive, 64K Video RAM upgrade and 1531-compatible mouse. **Poster Maker 128** has a suggested retail price of $29.95. For more information contact: Free Spirit Software, Inc., P.O. Box 128, 58 Noble St., Kutztown, PA 19530. Phone: (215) 683-5609.

Compiled by Louis F. Sander

Lou Sander's Tips & Tricks

As I write these words, I'm waiting for page proofs of Lou Sander's Tips & Tricks for Commodore Computers, *the new book based on this column. By the time you read these words, it should be available in stores and through the mail. Watch for the ads in this magazine and elsewhere. More importantly, buy the book!*

Our column has been heavy into game programs lately, so this month's tips are about the serious stuff. I'd have avoided amusements altogether, except I got another good one from the Snader Spriteworks. You'll be happy I included it.

If you have a tip of your own to share, by all means send it in. Don't worry if you're not a great writer—I'll be happy to put your masterpiece into publishable form. Send your goodies to:

Louis F. Sander
P.O. Box 101011
Pittsburgh, PA 15237

If your tip is printed, you'll get a check for at least ten dollars.

Handling Brand-New Disks: When I open a new box of disks, I always format all ten of them right away. To insure that each one has a unique ID code, I keep a 5.25-inch square card in the back of my disk storage box. When I give the format command, I write the new code on the card. My codes started with AA, AB, AC and so forth many years ago. I'm up to KM right now.

As soon as each disk has been formatted, I put a blank label on it and put it in my disk storage case. As soon as I save something onto a disk, I make note of it on the label. I don't necessarily make a note of every file or program, but I do write something general about the sort of material on the disk.

By following this procedure, I never have to stop what I'm doing to format another disk or find another label. Also, I can tell at a glance the status of any disk in my computer room. If it's out of its factory-sealed box, it's formatted. If it has a blank label on it, I'm pretty sure it doesn't contain programs. If it has something recorded on it, there's a note to that effect on the label.

Cory Moore
Westlock, Alberta
Canada

Removing Label Residue from Disks: Disk labels often leave an unsightly gooey residue when they are removed. While you might be tempted to clean it off with a solvent of some sort, the solvent can get inside the disk and ruin things pretty severely. It's worse when the solvent gets inside after it's absorbed all that goo.

It is safe and easy to use stronger goo to remove the label goo. I use a piece of gaffer's tape, also called duct tape, for this purpose. I roll it into a loop with the sticky side out, then I roll it smoothly over the gooped up area, pulling it away from the surface at a smooth angle. The label goo comes off cleanly onto the duct tape. It may take several tries to remove older, hardened deposits, but you'll succeed if you use new duct tape each time.

The main trick here is to use duct tape instead of something less powerful. Masking tape or cellophane tape just doesn't do the job.

R. R. Robinson
Dallas, TX

Double-sided Disks with the 64 and 1571 Drive: Here's a simple trick I thought all 1571 users knew until a bunch of friends showed they didn't. I guess they don't read their manuals.

When used with the 64, the 1571 is no faster than a 1541. Unless you take special steps, it won't even read or write more than 664 blocks on the diskette. (That's because when used with a 64, the 1571 powers up in 1541 mode.) To put the drive into 1571 mode, simply execute this command:

```
OPEN 1,8,15,"U0>M1" : CLOSE 15
```

While this doesn't make the drive any faster, it allows twice the storage of the 1541—a full 1328 blocks per disk. When using this mode, it's best to use disks that are rated as double sided, double density. The single-sided ones might work, but they haven't been tested at 1328 blocks.

Taryn Puleo
New Paltz, NY

Disabling SHIFT/COMMODORE: When the SHIFT and COMMODORE keys are simultaneously pressed, your computer switches between upper-case/graphics and lower-case/upper-case modes. This switch can be disconcerting if it happens in the middle of a program.

On a 64, you can disable the switching by executing:

```
PRINT CHR$(8)
```

You can enable it again by executing:

```
PRINT CHR$(9)
```

On a 128, you use PRINT CHR$(11) to disable SHIFT/COMMODORE and PRINT CHR$(12) to re-enable it.

Even with SHIFT/COMMODORE disabled, you can switch between the two modes from within a program. For upper-case/

graphics mode, execute: PRINT CHR$(142) For lower-case/upper-case mode, execute: PRINT CHR$(14)
Mike Prestwood
Milpitas, CA

More Reliable GET Statements: Have you ever noticed that your GET statements sometimes seem to get bypassed? This is probably because you pressed a key before you were prompted to. The key you pressed was stored in the keyboard buffer, and when the program encountered the GET statement, the key press came out of the buffer.

You can keep this from happening by emptying the keyboard buffer before the GET statement. Here's how to do it on the 64:

```
140 PRINT "PRESS A KEY"
150 POKE 198,0 : REM EMPTY THE BUFFER
160 GET A$ : IF A$=" " THEN 160
```

On the 128, the proper statement for line 150 is POKE 208,0. On the Plus/4, it's POKE 239,0.
Nathan Anderson
Lockport, Manitoba
Canada

Debugging Aids: The STOP command is very helpful while debugging a program. Judicious temporary insertions of STOP allow the programmer to check the status of variables while pausing the running program, then to continue the program by entering CONT. Unfortunately, this method produces screen dialogue that corrupts the normal display.

To solve this problem, I use the 128's GETKEY statement instead of STOP. GETKEY waits for a key press before continuing and can be used to branch depending on the key that is pressed. In the example shown, line 501 would be inserted as a breakpoint after the program's line 500. When line 501 is executed, the program pauses and waits for a key press. Pressing the "V" key displays variables A, B, C and D, then lists the program from the GETKEY line to its end. Pressing the "L" key lists the program up to the GETKEY line. Any other key just causes the program to continue, but without the screen disruption of a STOP command.

You can use any keys you'd like, of course, and you can have them produce any effect that you want. Our choice of V, L, four variables and two LIST ranges was completely arbitrary.

A similar technique can be used with the 64's GET statement, but it takes more than one line to implement. (That might make it harder to squeeze into a tightly-numbered program). A sample listing is included for your information.

It's interesting to note the differences between the two programs. The 128 version uses BASIC 7.0's ELSE statement to allow several branches on the GETKEY line, while the ELSE-less 64 version requires two extra lines to accomplish the same thing. Also, the 128 version requires END statements after the LIST commands, while the 64 version does not. In the 64's implementation of BASIC, a LIST terminates program execution. The more advanced BASIC 7.0 allows programs to continue after a LIST.
Robert B. Nixon
Woodland, CA

128 program

```
501 GET KEY A$:IF A$="V" THEN 9950
    :ELSE IF A$="L" THEN 9999
510 REM REST OF PROGRAM GOES HERE
9950 PRINT"[CLEAR]";A;B;C;D:LIST 501-
     :END
9999 PRINT"[CLEAR]":LIST-501:END
```

64 program

```
501 GET A$:IF A$=""THEN 501
502 IF A$="V" THEN 9950
503 IF A$="L" THEN 9999
510 REST OF PROGRAM GO ES HERE
9950 PRINT"[CLEAR]";A;B;C;D:LIST 501-
9999 PRINT"[CLEAR]":LIST-501
```

Using BASIC Programs on Drive 9: You probably have 64 or 128 disks that contain boot programs which contain a line like:

70 LOAD "ML PORTION",8,1

If you run such a boot program on a disk in drive 9, you'll get a Device Not Present or File Not Found error. That's natural, since the program is looking for something on drive 8, and it's really on the disk in drive 9.

You can usually get around this problem by changing the boot program to something like this:

70 DV=PEEK(186) : LOAD "ML PORTION",DV,1

Memory location 186 holds the device number of the most recently accessed device, which will be the drive from which you loaded the program. Using that value can save you the hassle of making up a special boot program for use in device 9 only.

The method works with 1541, 1571 and 1581 drives and with device numbers from 8 to 11.

One warning for you programmers—the line

70 LOAD "ML PORTION",PEEK(186),1

will not work. When BASIC encounters the LOAD command without a specific device number, it resets location 186 to 8, the number of the default disk drive.
Kurt Tappe
Malvern, PA

Using Machine-Language Programs on Drive 9: If you have utilities, games or other machine-language programs that access the drive during execution, you've probably given up hope of using them on your second disk drive. (They have the troublesome habit of always accessing drive 8). Luckily, if you know how to use a machine-language monitor and/or a disk sector editor, you may be able to modify them to work on other drives.

In machine language, most programs use this six-byte combination to open a disk file:

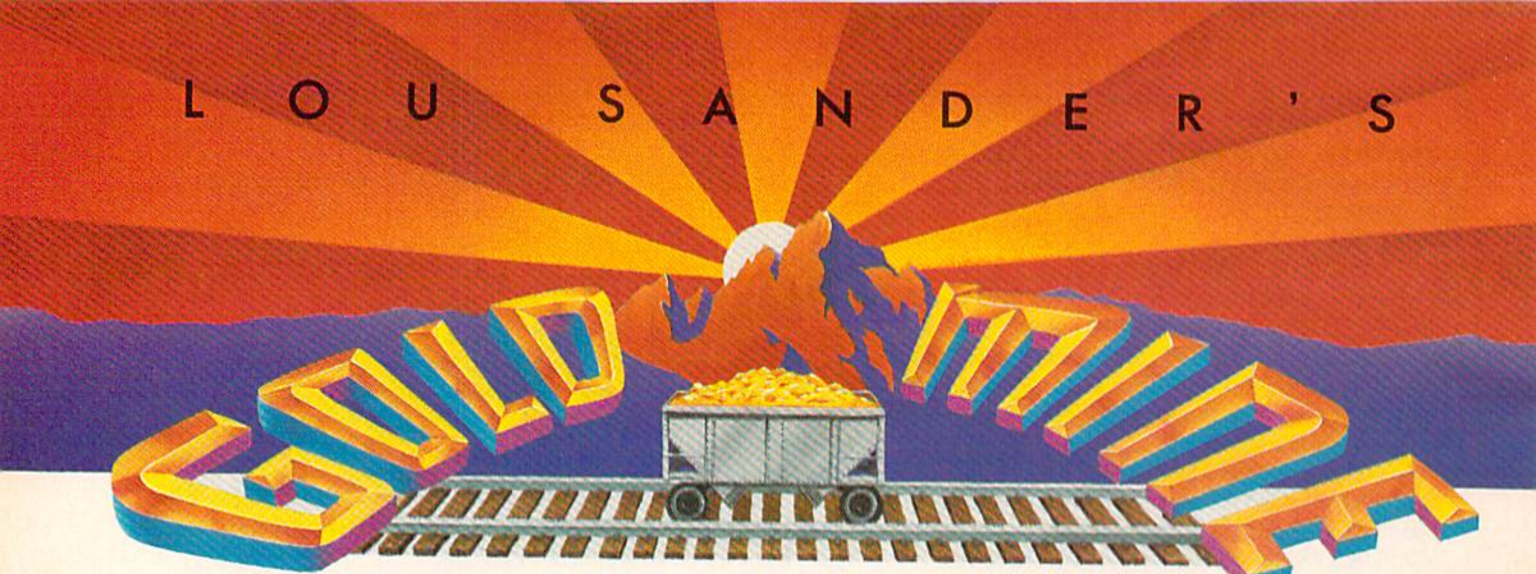
A9 02 A2 08 A0 02

This combination is the same as the BASIC command OPEN 2,8,2. To access other drives in BASIC, you would change the 8 to the value held in memory location 186, so that the OPEN command would use the most recently accessed drive.

In machine language, therefore, you should go through your program and change the A2 08 to A2 BA, so the program will load its files from the drive from which you booted it.

A machine-language monitor with a Search command can help you immensely with this task. If possible, search with the monitor, making note of all such occurrences. Then use your disk editor to make the actual changes on the disk. Be sure to change all occurrences of A2 08, or your program may revert to drive 8 at some unexpected time.

You should never try to make these modifications on an original software disk, because one mistake could ruin it. Always make them on a backup copy. *Continued on page 84*



Compiled by Louis F. Sander

This month's nuggets are from the exciting new vein we described in May, and from the oldest, biggest and richest lode in the mine. In other words, they're for games never before seen in the Gold Mine and for the most popular games among our contributors. So fill your pouch and glorify in the riches!

As these words are being written, I'm putting the finishing touches on the big book of Gold Mine tips. So far, the manuscript has tips on 512 different games from 83 software publishers. Ron Powers, my editor at TAB Books, says you should see it on the shelves no later than September. Look for the ads in this magazine and elsewhere.

In spite of the Gold Mine's obvious riches, we're always looking for new nuggets to print. If you have some you want us to consider, write them up and send them in. Put your name and address on every piece of paper you submit, and combine all tips for one game onto one sheet. Neatness counts.

Send your nuggets to:

The Gold Mine
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If we print your tips, you'll get fame, pride and a grubstake of five paper dollars. Gold Mine Rules!

1941: On the second scene, divers dive and cross, destroying anything in their way. To avoid them, move your plane to the top center and remain there. Prepare your roll for some bombers coming in through the left side of the screen.
Peter Pramataris
Farmingdale, NY

Airborne Ranger: When approaching your mission objective, stay as close to the barbed wire as you can, stopping occasionally. The enemy will almost always pass you by, and will almost never shoot you.

In temperate missions, you can move into tents, stand inside and throw a grenade. This will not kill you, but it will blow you up, along with the tent and any soldiers in or around it. Interesting, eh?
Morgan Sterling
Address Unknown

Auto Duel: To get loads of money, go to the Truck Stop and ride the bus to Atlantic City. Go to the casino and play poker, but don't bet more than $200 in the early stages. When you reach the $10,000 mark, you can start betting $500 and $600 at a crack. By using these guidelines, you can sometimes get over $75,000!
Tom Goss
Olympia, WA

The Bard's Tale I: The name of the Mad God is Tarjan. In the Catacombs, be sure to kill the Spectre on the third level down. When you kill him, you will receive an Eye, so keep an open spot in your party to get it. The Eye will be very important later in the game.
Matt VanBoven
Bellingham, WA

The Bard's Tale I: To avoid combat inside Harkyn's Castle, fight the six green robed men on Level 1. Have your stalwart band put on the six robes you found in combat. Now you look just like Baron Harkyn's men, and can avoid all sorts of trouble!

Once you fight the Mad God Tarjan inside the Castle, you will be teleported past the gates of Kylearan.

To get the Ybarra shield in the Castle, say SHIELDS to the mouth on Level 3.
Les Boross
Redwood City, CA

The Bard's Tale III: Change class to Chronomancer before you complete the first dungeon. That way, the old man can award the experience points to a Chronomancer, not to an Archmage who will lose it all when he becomes a Chronomancer.

Also, you must have a normal magic-using character to complete many of the dimensions. (I went through the whole thing with seven characters!)

When you fight Tarjan, get your highest level character to cast the Preclusion spell (PREC) to try closing Tarjan's gate to hell. Tarjan never attacks, so don't try to take him out first. Aim for his buddies.
Michael Bobbitt
Cambridge, Nova Scotia
Canada

B.C. Quest for Tires: The faster you go, the more points you get for jumping over and ducking under things. On the pool with the turtles and the lady, don't go until she lowers her club (if she

has it up, she'll hit you). On the top of the hill, slow down so the bird can catch up to you. To jump the pit at the bottom of the hill, you need to go as fast as you can.

In the snake pool, wait until the fourth time his head sticks out. In the tunnel there are things you need to jump, and things you need to duck. The things to duck are indicated by two lines sticking out of the ground. After that comes the victory.
Andy Flor
Fargo, ND

Countdown to Shutdown: You should make maps of all the levels as you get through them, showing where all the elevators and holes are. Then if you ever get lost, all you have to do is look at the map to find the most logical places for elevators.
Shane Doucette
Fort Qu'Appelle, Saskatchewan
Canada

Defender of the Crown: Before you Buy Army for the first time, raid an enemy castle. Be sure to Read Map and check which lord has the worst swordplay. This should double your money.
Eric Hannemann
Marquette, MI

Double Dragon: This tip lets you pass each level with more lives, and finish the game in 25 minutes. It's very easy to use at all levels.

Choose the two-player game, then as you and your partner enter the first stage, move one of the men to the top of the screen. As the enemy enters the screen and starts hitting one of you, jump up once. The enemy will freeze in one place, and your other man can easily kill him. The enemy won't move until he dies!

You always have to stay on top of the screen if you want to freeze the bad guy.
Mehran Mehryar
Great Falls, VA

Eternal Dagger: The best party for this game is two full Sorcerers, two full Priests, one Sorcerer-Priest, two Fighters and one Ranger-Thief for scouting and stealth. This party has maximum advantage in any form of combat, whether against Undead, enemy Sorcerers or normal monsters.
William Wilhite
Arlington, TX

F-19 Stealth Fighter: On your way home, try landing at any friendly base instead of going to your assigned base. You should get the same number of points.

After your mission, dispose of your weapons to save fuel.
Cornel Hock
Laval, Quebec
Canada

GBA Championship Basketball: Two On Two: If you're playing with a human teammate, one player should have an inside shooting rating of six, and the other should have an outside shooting rating of six. When you go down court, the inside man sets himself up under the basket for the rebound, while the outside man shoots for a three-pointer. If the three-pointer doesn't go in, the rebounder can score an easy two points, or pass it out for another long-distance try.

Using this method, my brother and I have beaten the computer 148–23!
Paul Holstein
Fairmount, ND

Ghostbusters: At the end of the game, here's how to get your men past the Marshmallow Man. When you see him jumping over the door to the building, move your man under him, getting as close as you can without being stepped on. Align the top of your man's head with the gray line in the middle of the door. Wait until the Marshmallow Man lands on the ground. As soon as he jumps, push up.

Repeat until all your men are inside the building.
Nick Matthew
Evans Ironton, OH

Hybris: In this Amiga game, you can keep the fourth weapon expanded by trading it for the fifth one when you are running low on expansions. Do not expand the fifth weapon when you get it. Instead, let a bullet pierce the armor when it stops flashing.

You'll be back to the fourth weapon with full expansions.
Gerald M. Turner
Westminster, CA

Indiana Jones in the Lost Kingdom: To win at Level 4, you must transfer the color in the gems on the left of the screen to the gems in the section to their right. You do it by striking the gems with your cane, which carries one color at a time. When the cane changes color, you can transfer the cane color to an uncolored gem by striking it. When you've filled an entire section of gems, another elevator will be activated, so you can carry the colors to another section.

Continue the process until all the colors have been transferred to the gems at the far right of the screen, all elevators have been activated, and an exit opens. Now you can walk onto Level 5.
John Shull
Fayetteville, NC

James Bond: When there's a level where objects are falling on you, wear the hard hat. It protects you and keeps you alive much longer.
Cory Moore
Westlock, Alberta
Canada

Knight Games: To win every game except the shooting games, just keep repeating an attack move. Pretty soon, you'll win.

In the shooting games, timing is very important. Always aim ahead of moving targets. In the target game, shoot just before the target face shows.
Andy Flor
Fargo, ND

The Last Ninja: Here's some interesting information about the use of several items:

Smoke Bomb—When thrown at the dragon's head, puts him to sleep.

Claw—Helps climb up or down walls in the Wilderness. (Be sure to walk backwards while climbing down the Stone Wall.)

Glove—Picks up the flower in the Palace Gardens.

Amulet—When you carry this and kneel in front of the Golden Buddha in the Palace Gardens, you'll receive Ninja Magic and advance to the Dungeon.

Rope—Helps you climb out of the Dungeon in the room with the rings on the wall.

Key—Opens the first door in the Palace.

Flower—In the Palace, putting it into the vase in the room north of the hall with the statue will get you Ninja Magic. This will let you walk on the red carpet leading to the Inner Sanctum. In the Inner Sanctum, put it into the vase in the room with the red curtain. The curtain will open and reveal a secret passage.

Potion—When thrown onto the dog, puts him to sleep. Be sure you're not carrying any weapons. (The picture on the back of the package is *wrong!*)

Thomas Tien
Edison, NJ

Leisure Suit Larry: When in the bathroom in Lefty's Bar, examine the sink carefully. You might find something useful. Use your password when you knock on the red door with the peephole.

In the casino, examine the ashtray to find a pass to the disco. Meet Fawn in the disco and dance with her. By the way, Fawn likes diamonds, among other things.

When gambling, save your position as you first sit down to play, then change the bet to $20. If you lose, reload your position and try again.

Just for fun, go to the casino's lounge and listen to the live comedian's act. Some of his jokes are absolutely hilarious! It's also fun to knock on doors in the casino. Try doors on different floors, and try knocking on the same door several times.

Daniel C. Pryor
Phillipsville, CA

The Movie Monster Game: When destroying a Landmark, it's easier to play in a city that has only a few Landmarks. In San Francisco, it's usually the Golden Gate Bridge. In Paris, it's often the Eiffel Tower.

If you're playing with a slow monster, try to stay away from the water. There are lots of boats there to shoot you, and if you're slow, it's hard to catch them. Also, don't use slow monsters on Escape, since there are lots of tanks, jeeps, helicopters and planes. Sphectra is good for this, because she can get out of there fast, especially with the use of her Sonic Scream.

Billy Fraser
Demariscotta, ME

Nine Princes in Amber: After much frustration, I decided to use a sector editor on this game. I found a wealth of information on almost every sector that was written to. I still haven't found the best of the over 40 possible endings, but I have come much closer by using the information I found with my sector editor.

Chris Harrison
Morgantown, WV

Out Run: In this high-speed game, the music seems to slow down everything except the clock. If you ever want to get past the five stages, drive with no music. This will give you an extra

five seconds or so to complete the second stage, and cumulatively more time on the others. Also, it's better to slow down than to hit a slower vehicle.
Rudy Fulawka
Yorkton, Saskatchewan
Canada

Phantasie II: When fighting Nikademus, you want every spell possible, so take the Air elemental. Try to break him, but don't sell any pieces.

Follow these directions when the arches appear in the Dark Castle: E, S, N, S, E, S, E, W, E, E.

Look for secret doors in the southwest portion of the last dungeon.
Scott Janousek
Duxbury, MA

Pirates! Try to get 400–500 men and attack a town by marching to it and selecting Attack. Usually, the fort's garrison is afraid to go out to fight you, so you'll be whisked to the sword battle with the commander.

Try to wipe him out quickly and reduce his garrison by hitting him, even though he has surrendered.

If your forces are at least three times larger than the fort's garrison, there's a very good chance that you will be able to convert the town. I've converted almost half the Spanish towns in this way.

Try to hold ranks with two countries. England and France are my favorites. You will get more land from each country every time you are promoted. You'll also become a more respected member of the community, which helps a lot when you end the game.
Barry Solomon
Montoursville, PA

Questprobe II: If you think there's nowhere to go but your starting dome and the station in limbo, think again. In fact, there are a number of other domes that look exactly like the one you start at. By looking around when you get to them, and by hopping on and off the station, you can discover many domes to explore.
Michael Denman
Katy, TX

Red Storm Rising: While stalking your intended quarry, try to remain on the opposite side of the thermal layer. This will significantly reduce your chances of being detected before reaching a good firing position.

Do not shoot torpedoes in a straight line unless absolutely necessary. Enemies often shoot back down the same track. The best attack is to keep moving the PAP point so that your torpedo is guided in, but not activated until the last moment. That way, they can't decoy or jam your torpedo or even shoot back at you.

It's often necessary to use the active sonar when going up against the Russian diesel subs. This gives your position away, but the alternative is to let them get away undetected by your passive sonar and towed array.

When attacking major warships, it's often a good idea to fire more than one Tomahawk or Harpoon at your target. These

Continued on page 95

Reviewed by John Ryan

Deathlord

Computer: Commodore 64
Publisher: Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Medium: Disk
Price: $29.95

Instead of fighters, clerics, rangers and magic-users, you'll find their Asian counterparts: Senshi, Shisai, Ryoshi and Mahotsukai.



One of the most time-consuming and exasperating aspects of fantasy role-playing games is developing new characters, especially since the average life expectancy of a novice adventurer falls somewhere between that of a combat chopper pilot and a mayfly. I don't know about you, but when I boot up any new FRP game, I dread the sure-to-come ritual of character development: die, reboot, die, reboot, gain a level, die, reboot—you get the picture.

Along comes *Deathlord,* Electronic Arts' massive new fantasy role-playing game for the Commodore 64. "Users may transfer characters developed from *Bard's Tale, Wizardry,* or *Ultima III,*" declared its press release. Great, I thought, I won't have to start from scratch! I developed some real power players from my last session of *Bard's Tale II* and delighted over the prospect of transferring them over to *Deathlord.*

I'm sorry to report to you the demise of my transferred characters. My mage caught an assassin's dagger in the heart; my fighter had her eyebrows knocked from her forehead by an ogre's hammer. Drat! As I sat gaping stupidly at the carnage on my monitor, it became apparent to me that succeeding in *Deathlord* would take more than simply transferring a few high-level adventurers over from another game. *Deathlord* demands patience, determination and a balanced roster of character classes. Additionally, a healthy respect for Ogres wouldn't hurt.

Deathlord is a fantasy game of heroic dimensions, and can obviously trace roots that were first planted by the ultra-successful *Ultima* and *Bard's Tale* series. As a matter of fact, you may find glaring similarities between *Deathlord* and the other two, as if the authors had gleaned the best aspects of both series, added a little spice and a few twists, then molded the result into *Deathlord.* While this may sound a bit critical, rest assured that the program can stand partly on its own merits, if only because of some of its innovative features and the magnitude of the program itself.

The tale is a familiar one: An evil power has infested that land of Kodan, destroying one of the realm's largest cities. Nakamoto, ninth Emperor of the kingdom, has sent the call for six brave adventurers to meet the dreaded Deathlord, dispatch him and return peace to the land—a task not to be taken lightly, for sure. Although *Deathlord* is primarily a medieval contest of swords and sorcery, it differs from the usual FRP fare in that it has definite Japanese overtones.

Instead of fighters, clerics, rangers and magic-users, you'll find their Asian counterparts: Senshi, Shisai, Ryoshi and Mahotsukai. In fact, there are 16 character classes and eight races (whose names are almost as difficult to pronounce) to choose from. Also, as you develop each of the six characters needed for your roster, you will have the opportunity to select both their sex and alignment (good, neutral or evil). Alignments not only affect how other non-playing characters interact with you, but also how members of your own party view you. (You see, some people may not want to adventure with an evil, pig-toting cleric.)

As I mentioned earlier, you can import characters developed in other games. Just be aware that transferred characters will be substantially reduced in level and capability, so if you have visions of importing a fourteenth-level arch-mage, forget it; you'll be lucky to come away with a sickly third-level Shisai. Moreover, your old adventurer may be barely recognizable after the transformation, as *Deathlord* will choose the character's class, race and, occasionally, alignment according to that which supposedly best matches the program's theme. While transferred characters will possess a bit of gold, all armor, weapons and magical goodies garnered from other games will be stripped.

Throughout the quest, the scenery is viewed from an overhead perspective as you traverse the kingdom of Kodan. There are cities, towns, dungeons, temples, pyramids, ruins and a plethora of other locations to explore, all populated by personalities that can be interacted with to a limited degree. Talking, chatting with or bribing non-playing characters will provide you with valuable clues needed to complete the quest.

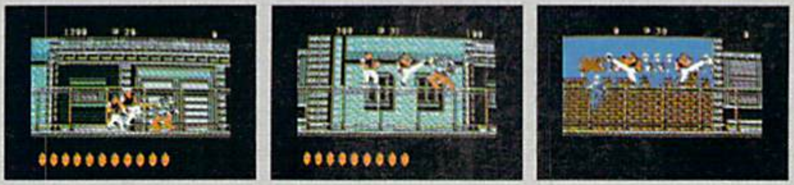
The graphics are reminiscent of those used in the *Ultima* series: you can't see though mountains or walls, non-playing characters move about indiscriminately; oceans and rivers ripple quietly with the breeze. And time is also an important factor here. The sun rises and sets over the land's grasslands, forests, swamps, deserts and frozen tundra. Get caught outside of the safety of a city at night, and you are liable to meet a host of nasties—all intent on ruining your sleep. The time of day is

Continued on page 78

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What Striker and Blade have to do isn't any picnic either. But someone's got to do it, right? What better time for you to start dishing out the ***BAD DUDES'*** own version of the criminal justice system? The action is top-notch. The graphics, phenomenal.

BAD DUDES from Data East. Mr. President, help is on the way.

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Screens shown are from the IBM version. Other computer versions may vary.

Reviewed by Scott A. May

Home Video Producer

Computer: Commodore 64
Publisher: Epyx
600 Galveston Drive
Redwood City, CA 94063
Medium: Disk
Price: $49.95





The program allows users to create multicolored video sequences featuring graphics, text and a host of special effects.

Here's a familiar word that I predict you'll be hearing a lot more of in the future: interfacing. In a nutshell, it means to form a common boundary between two objects. It also means getting the most from your personal computer and having fun in the process.

The most mundane forms of interfacing are practiced by every user, linking the computer to a monitor, disk drive and printer. Modems allow two different computers to interface via telecommunications. Other practical and unusual forms of interfacing include biofeedback, speech synthesis, robotics and home security. The list continues to grow.

With the number of U.S. households owning videocassette recorders approaching 60 percent, VCR/computer interfacing has become increasingly popular. Long thought to be in the strict domain of high-end computers, Epyx brings innovation down to earth with *Home Video Producer* for the Commodore 64.

Recording images from computer to videotape is hardly new—anyone with a length of cable and the right connectors can do it. What's been lacking are the sophisticated software tools to create something useful. *Home Video Producer,* designed by Turning Point Software, represents a significant step in that direction.

The program allows users to create multicolored computer-generated video sequences featuring graphics, text and a host of special effects. Record your final product onto tapes of family vacations, sporting events, birthdays, weddings and other home movies. Use them as introductions, intermissions or closing credits. Your imagination is the only limit.

Terrance McInnes and Epyx continue to amaze me with the improved quality of the company's instruction manuals. To this end, the documentation for *Home Video Producer* is among the best they've yet produced. The authors arrange information in logical order, filled with clear illustrations and step-by-step examples. It doesn't get much better than this.

The first section of the manual explains the simple, yet potentially confusing, hardware requirements and mechanics of connection. The preferred method uses an eight-pin DIN (composite monitor) cable connected from the computer's video port to the VCR's Video In (via RCA jacks). This gives the clearest picture on either a TV or monitor. Since *Home Video Producer* doesn't incorporate sound, leave the audio side unplugged to avoid white noise.

Another method utilizes the computer's built-in RF modulator. This is particularly useful for older VCR's lacking direct video input (RCA jacks). Simply run a connection—using antenna wire or coaxial cable—from the computer's TV switchbox into the VCR, then out to a TV. You should even notice a cleaner signal, since most VCR's filter out local RF interference.

A third option allows you to record your video sequences directly to a camcorder. In some cases this may seem like the roundabout way of doing things, often requiring special jack adaptors. It does, however, reduce the hassles of editing and rerecording home videos. If your VCR has no audio dubbing feature, camcorders also give you the capability of adding sound.

For your convenience, *Home Video Producer* is not copy protected. Before getting started, copy both sides onto separate disks and store the original in a safe place. The program supports dual drives, so use the second disk—containing video templates and graphics—as your data disk.

The program's main screen is an ingenious design of icon windows and pull-down menus. A dialogue box runs along the bottom edge, instructing the user during all aspects of operation. The entire program is keyboard controlled, mostly using the cursor and RETURN keys.

Above the dialogue box are the actual video frames. Up to 16 frames can be used to comprise a video "strip." Beyond that, strips must be linked together to form longer movies. Although only four frames appear on the screen at one time, this section easily scrolls to reveal more.

Highlighting a frame allows you to fill its contents from a special menu. Available selections include changing the background color, adding graphics, text, backdrops or borders.

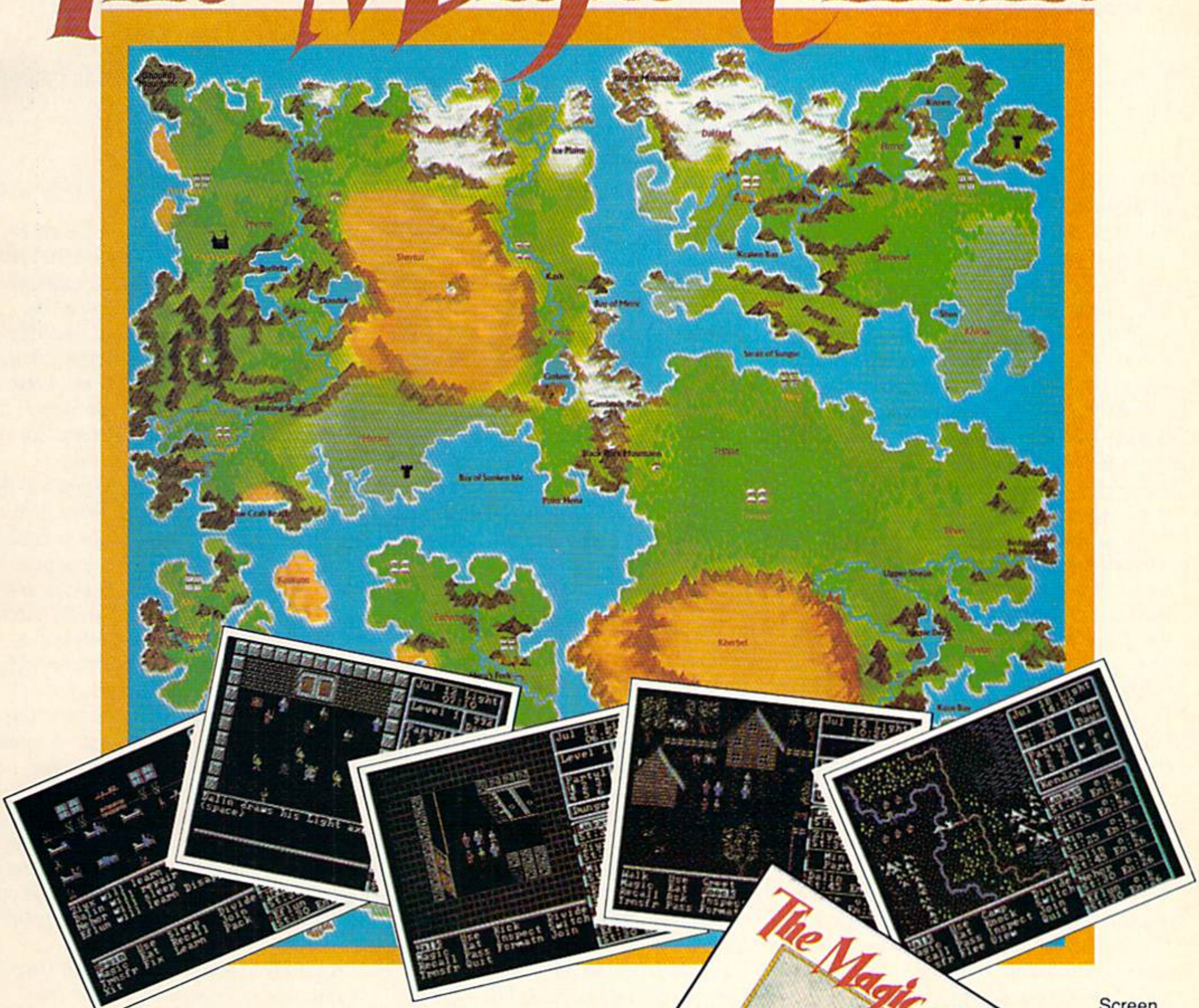
Keep in mind that *Home Video Producer* is an assembler, not a creation tool or art program. Users assemble video sequences from the program's vast array of pre-designed graphics, text fonts, backdrops and borders.

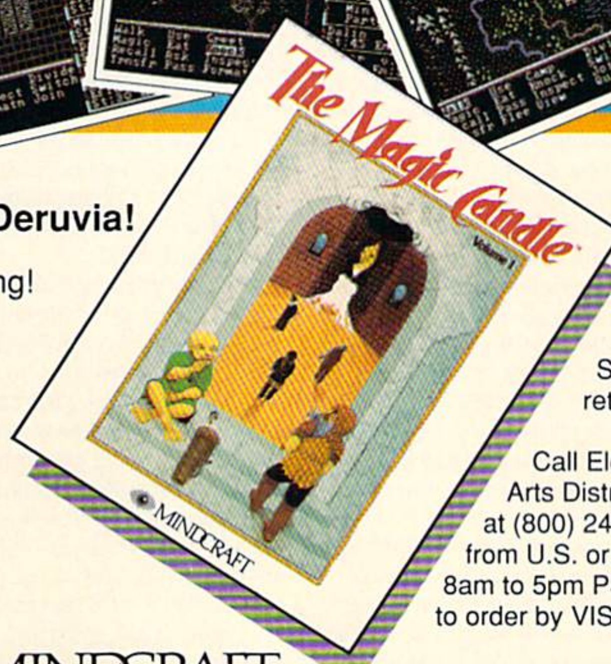
The disk contains eight borders, 14 graphics categories (80 total pictures), and 14 text fonts. Also included are 12 complete fill-in-the-blank video templates (pre-designed movies) and 13 individual strips. Subjects run the gamut from sports, vacations, birthdays, babies, pets, school, anniversaries and holiday. There's literally something for everyone here.

Beneath each frame are three special effects boxes. The first indicates the chosen effect for that frame (if any): Wiping, Tearing and Scrolling (four directions each) as well as Spiraling. These effects are used to either introduce or dissolve video images. The second box determines the speed of the effect, while the third con-

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Screen photos from IBM EGA version.

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Reviewed by Russ Ceccola

Deep Space

Computer: Commodore 64
Publisher: Sir-Tech Software, Inc.
P.O. Box 245
Ogdensburg, NY 13669
Medium: Disk
Price: $34.95



In a strange twist of game design and plot, *Deep Space* is a simulator of a simulator.

Remember when *Star Raiders* was released for early home computers and the Atari 2600 (the grandfather of all video game systems)? It was a very popular game because you were able to travel through and explore different sectors of space as well as fight enemy ships in flight. You had to play navigator, pilot and weapons officer. The game reflected the *Star Trek* quadrant game that was on early timesharing systems. In that game sectors were represented by a grid and the different planets, ships and special objects were represented by various characters on the grid. After each move, the grid was updated and results were displayed onscreen or printed out. In *Star Raiders,* looking at the grid was only one part of the game (navigation); the bulk of the game relied on a forward view from the cockpit of the spaceship you were flying. Designed in the fashion of *Star Raiders, Deep Space* brings hours of fun, action and challenge in space to the Commodore 64.

In *Deep Space,* you fly an SF181 "Katana" Transport/Interceptor spaceship that was specially designed to handle the missions you are going to attempt. There is a story behind *Deep Space* that contributes to the atmosphere of the game and makes you feel like you're playing an important part in history by playing the game. The Trojan Asteroid Cluster is positioned in space somewhere between the orbits of Jupiter and Mars. Within this cluster, there are four quadrants in which parts of *Deep Space* take place: Copernicus, Herculis, Nova and Trojan. The year is 2123 and it seems that a race of bugs, the Andromedans, is planning to take over all the outposts in the Asteroid Cluster to control the mining of the precious mineral uranium—the primary fuel in the galaxy since conventional fuels were wiped out.

The Andromedans have been causing havoc in the Cluster by attacking outposts, blowing up diplomatic envoy ships, launching canisters of deadly microorganisms into space and beginning an all-out invasion of the Cluster and its quadrants. Your mission is to prepare for any similar attacks from the Andromedans by practicing on the United Planets simulator.

Deep Space is a space combat simulation game. What you are simulating is the United Planets' simulator. So, in a strange twist of game design and plot, *Deep Space* is a simulator of a simulator. You can choose one of four missions: Outpost, Escort, Plague and Invasion. The missions involve events that have already happened. You, as a newly-drafted member of the United Planets Space Force, must practice these missions on the simulator so that the same events won't happen again. Next time, you'll be ready for the Andromedans.

Each mission has different objectives and gives you enough variety so that you won't get bored quickly and shelf *Deep Space*. In the Outpost mission, you mine ore from various outposts in the Copernicus Quadrant, protect other outposts and shoot down Andromedan ships. In the Escort mission in the Nova Quadrant, you must guide an envoy ship to a neutral base planetoid while knocking off assassin ships. Deadly canisters of microorganisms must be destroyed in the Plague mission, while you must defend your home base from an all-out attack involving the Andromedans' most advanced cruisers in the Invasion mission.

Your Katana spaceship is very easy to control and is one of the best-designed vehicles for a game of this level. In addition to being able to look out your ship to the left, right and front, you can call up a quadrant map that shows where you are in relation to other quadrant occupants. For the most part, you want to look out the front of your ship, but sometimes you need to line up with an outpost by using the side views. The control panel of the ship is easy to understand. There are missile, laser, shield, speed and fuel indicators in addition to a radar screen that shows your surroundings. By hitting the space bar, you call up an options screen that provides you with the rest of the commands. These include: Enable Missiles/Lasers, Raise/Drop Shield, Hyperdrive, Magnify/Demagnify (view from the cockpit), Scan To 10m/Scan To 1km (radar view), Look Left, Look Right and Quadrant Map. These options are self-explanatory. But that's all you have to go on to play.

During the bulk of the game you will fly around from quadrant to quadrant, looking for outposts, canisters, bases or fighters in those quadrants. Depending on your mission, you will have to move fast or slow. There are three skill levels (Novice, Medial and Expert) that determine how much you have to do. If you are playing *Deep Space* on Novice level, you only have to mine ten tons of uranium in the Outpost mission, clear one sector of canisters in the Plague mission or face one planet-busting Sword cruiser (the "baddest" Andromedan fighter) in the Invasion mission. On the Medial level, these amounts are doubled; on the Expert level, they are tripled. The Escort mission is not affected by the skill level in a numerical way.

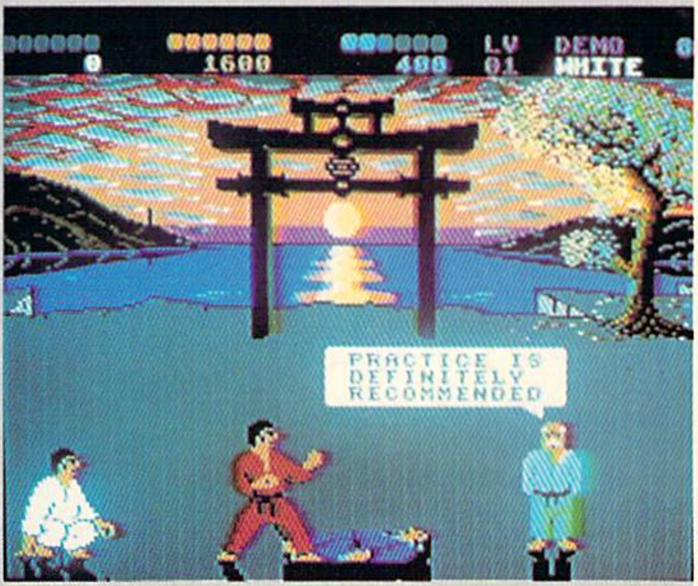
It is easy to control your ship in *Deep Space*. You will generally look at the quadrant map on the screen, lock in a goal sector and increase your speed to fly to that sector. You can use hyperdrive, but that reduces fuel drastically. On the way to the quadrant, expect to run into enemy ships and avoid asteroids and planets that hurtle past. You will bump into many an asteroid before you get used to flying your ship (which takes a game or two). Even the damage indicators (boxes showing percent of damage that point to a diagram of your ship) in the right view are easy to read. Just remember that although the controls are easy, *Deep Space* itself is a very challenging game. In no time, you will be shooting from quadrant to quad-

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Reviewed by Scott A. May

Chop 'n Drop

Computer: Commodore 64
Publisher: Activision
3885 Bohannon Dr.
Menlo Park, CA 94025
Medium: Disk
Price: $29.95



A quick reality check reveals you're not part of some Far Eastern travelogue, but in the midst of a bruising karate contest. Welcome back.

Recent years have seen an influx of martial arts games from just about every corner of the globe. Nearly lost among the flurry of fists and flying feet was a real gem, Epyx's *World Karate Championship.* Of all its competitors, this one packed the most ferocious punch.

From out of obscurity and newly-resolved legal tangles, the System Three Software designers have released the follow-up to their overlooked classic. Whether you're a loyal fan of the original or a fresh recruit, Activision's *Chop 'n Drop* will knock you out.

The basic structure of *Chop 'n Drop* sports little difference between it and *World Karate Championship*—or any other game in this popular genre, for that matter. They all owe a debt of gratitude to Data East's *Karate Champ,* the patriarch of arcade-style martial arts games.

Thus we arrive at the aforementioned legal dispute. In 1986, Data East slapped a "look-and-Feel" lawsuit on Epyx, claiming *World Karate Championship* violated the copyright of *Karate Champ.* Things were looking glum for our heroes until recently, when the court of appeals ruled in favor of Epyx. The appellate court upheld the right of game developers to create products of similar design. Barring further appeals, the case marks a major victory for "the little guy."

Breathing a collective sigh of relief, the little guys at System Three charged on with *Chop 'n Drop.* Sandwiched between several innovative changes in the game, the designers have included some terrific sight gags. In light of their problems, it's a welcome wink of self-assurance.

Even the title screen offers a hint at the fun to follow. Hearty voice synthesis—"Yee-ah!" "Umph!"—punctuates the spirited theme song by Activision music mogul Russell Leiblich.

Unlike the designer's previous work, the main combat area features only one background scene, but it's a sight to behold:

An Oriental archway stands tall at the edge of a magnificent bay. In the distance, beyond a mountain coastline, the sun rises on sparkling blue water. Waves gently ripple the glassy surface, quivering the rays' multicolored reflection.

Occasionally a dolphin jumps, arcs and returns to the sea. From the corner of your eye you watch a butterfly drifting lazily across the crimson sky. A foot strikes your head, sending you to the ground with a thud. Hey! As long as you're down there, take a look at that inchworm working its way along the grass. Amazing.

A quick reality check reveals you're not part of some Far Eastern travelogue, but in the midst of a bruising karate contest. Welcome back.

Chop 'n Drop features identical characters from *World Karate Championship,* but with more fluid animation and responsive control. The greatest improvement, however, is the addition of a third contestant. Played solitaire or with a friend, this extra computer-controlled opponent opens up a new world of strategic possibilities.

Each player has at his disposal 12 unique combat moves, each as vicious as it sounds: Front Face Punch, Stomach Kick, Head Butt, Double Face Kick and so on. Each move is assigned a joystick position, with or without the fire button depressed. Non-combat moves include jumps and back flips. Some are defensive moves. Walking backwards automatically puts you in a blocking mode.

Points are scored for landing successful blows. Values vary according to the difficulty of the move. A Head Butt, for example, scores the highest because you must be very close to your opponent, a highly vulnerable position.

In addition to the numerical score, combat points are awarded for each hit. Attacking from the front earns two combat points, while attacks from behind earn one.

The game is played in rounds lasting 30 seconds, or until one player earns six combat points. Bonus points are awarded for ending the round before the timer runs out. At the end of the round, the contestant with the lowest number of combat points is eliminated from the game. In case of a second place tie, all three continue to the next round. It's do-or-die cutthroat competition that favors smart, aggressive players.

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Reviewed by Gary V. Fields

Modem Wars

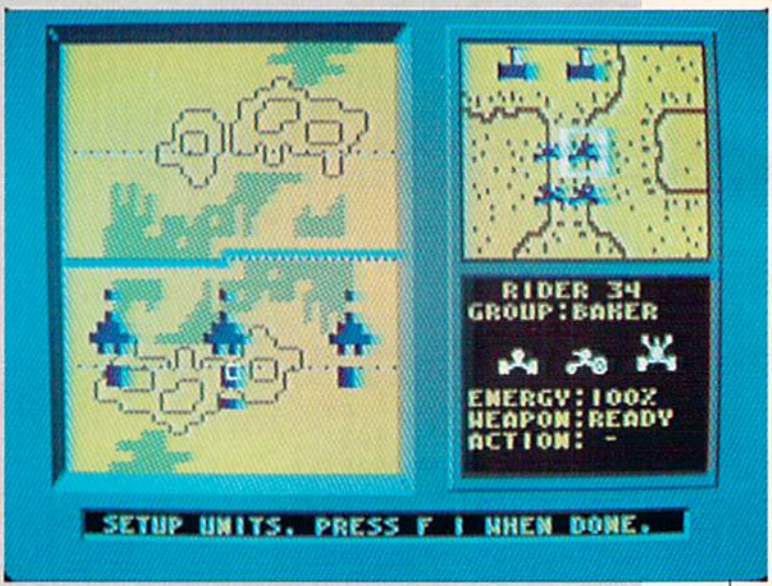
Computer: Commodore 64
Publisher: Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Medium: Disk
Price: $34.95

As the title suggests, *Modem Wars* is a strategy game which lets two players do battle with one another via modem. But before any of you who do not own a modem are turned off, you should know that you can war with the computer as well.

The game offers a total of 31 separate battlefields along with five different combat units: Grunts (basic foot soldier), Riders (mechanized infantry), Boomers (artillery), Spies (for reconnaissance) and the all-important Comcen (mobile headquarters). During all battles, you are positioned in the Comcen, from which you view your forces and issue commands. From within the Comcen you can activate radar, launch destructive drones, fire missiles, repair equipment and view the status of your forces. As you would expect, the defense of your Comcen is essential to victory. On the other hand if you can locate and destroy the enemy's Comcen, victory is assured. If the headquarters of neither army is destroyed, victory is determined by a point system.

The game offers seven different scenarios, each of which is progressively more difficult: Scrimmage, QB Sneak, The Bomb, Face-Off, Sluggers, Full War and Defender. If while you read those names you had the impression I was reviewing a football simulator instead of a war game, you would be half right. The game designer feels that war, if stripped of it heinous side, could be compared to a sporting event which combines strategy and action—thus the football-sounding scenario names. As is true of a sporting contest, both sides are equal here, so to win you must either strike the enemy at its weakest point, out-hustle him or out-think him.

Once you have selected a scenario, the screen will divide into four windows, the largest of which shows the battlefield and opposing forces. A wide, shallow window at the bottom allows you to type messages as well as receive battle reports. The upper-right window shows a magnified view of any section of the battlefield you select (via joystick). The lower-right window identifies the combat unit directly under your cursor and its status.



Modem Wars is a fast-paced game which most war gamers (and football enthusiasts) will enjoy.

For instance, if you move the cursor over a foot soldier, the window will report on the group to which he is assigned, his energy level, the condition of his weapon and what action he is attempting. To issue a command you simply move the cursor over a unit and click. Next you move the cursor to where you want the unit to move and click again. The trick here is to get your troops from point A to point B in one piece without wasting time or energy. Because the battlefield contains hills, woods and a river as well as open plains, the direct route is rarely the best route. Smart generals will select the marching routes of their troops carefully if they hope to succeed.

Because the game's designer was greatly influenced by the idea that sporting events and war have much in common, the game even includes an "watch game film." When this is selected, the last battle fought is instantly replayed, allowing the coach/general to determine where mistakes were made in an effort to avoid them in future conflicts. At the end of a battle both sides' scores are displayed, and a winner declared.

The name Dan Bunten should ring a bell for many of you. Even if it doesn't, the Commodore 64 hits he designed will. They include: *M.U.L.E.*, *Robot Rascals* (one of my favorites), and *Seven Cities of Gold*. If you are familiar with his earlier works you will feel right at home with *Modem Wars*. Many of the better features of those early games, as well as some of the graphics, are duplicated here. *Modem Wars* is a fast-paced game which most war gamers (and football enthusiasts) will enjoy.

The game's graphics are not the best I've seen on the 64, yet they are well formed and functional. The same could be said for the sparse sound effects—effective but nothing to brag about. But what is worth bragging about is the number of scenarios and battlefields included and the speed at which the program allows the user to issue multiple commands to several different units—all without slowing the action.

I was happy to see that the game incorporates the mystery of war. Because of this realistic feature, if your troops are not in contact with enemy forces, you will lose sight of them (although radar may still help). This means one of the most important weapons any commander can possess is available—surprise.

And by the same token, you must keep your spies healthy and active to prevent

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Reviewed by Edith Chasen

World Geography

Computer: Commodore 64
Publisher: BOBCO
200 Seventh Avenue
Suite 111
Santa Cruz, CA 95062
Medium: Disk
Ages: 8 years–Adult
Price: $24.95

World Geography is an excellent educational game with up-to-date information on 175 countries. It is a skillful compilation of facts taken from the World Almanac. The entire presentation is outstanding—this manufacturer invested much time and energy to make this a polished product with wide audience appeal. Many times I've seen educational software advertised as a game, and when I've started to play it, I was very disappointed at the quality of the game. But not this time—this one has been given enough attention to make the product actually appealing as well as instructive.

The geographical data is introduced as a multiple-choice question game for one or two players. You can choose to study America and the Pacific, Eurasia, Africa or all of these. Within each geographical area, the categories covered include the country, its capital, currency, population and language.

The game begins by dividing the screen into two windows. In the right window is a rotating globe which stops at the country you are about to study. A blinking dot appears on the location of its capital city. On the left is an enlarged view of the area plus a display of its flag. The categories are listed colorfully at the bottom of the screen. The animation is smooth; the graphics vivid and clear. The screen remains uncrowded; the fonts used are fancy enough to be eye-catching yet simple enough to be easily readable. Even the globe rotates in time to the background music, keeping your attention.

At the top of the screen are three boxes which keep track of how much time is left for you to answer, your score and how many countries are left in the game. Timing for each question can be varied—if you choose to play as a novice, you'll get more time to answer each question than if you play at an intermediate level. The expert choice has the shortest amount of time to answer. You can get a higher score by answering faster, as your score is ten times the timer value when you answer. If you get enough points, you also get a bonus question, which gives you three flags and asks you to match a country to one of them.



Within each geographical area, the categories covered include the country, its capital, currency, population and language.

At the end of the game your score is displayed separately for each category. This is a great way to summarize your efforts, for you can see at a glance which category you need to work on the most. You can then play the game again or simply review the specific information you need.

I especially like the harpsichord-sounding music played in the background of this program—two pleasant renditions of musical selections by Bach. This is Bach with a beat! It is a terrific idea for a quiz game, providing interesting music which is just lively enough to keep you attentive, rather than becoming a distraction. If you get an answer wrong, a soft warning refrain is played, not a harsh blaring noise that jolts you out of your seat. This is really a breath of fresh air. I like the idea that if you make an error, the music generated will not be loud enough to embarrass you by notifying everyone in the room of your mistake.

A joystick is optional here, so knowledge of the keyboard is not necessary. This is an important consideration for younger players. The disk loaded and ran fine with both my Mach 5 and Fastload cartridges installed. The manual is short and well-written; you won't have to waste study time poring over it just to be able to start playing. In fact, I could find nothing bad to say about this software. I could not find any bugs in the program or errors of fact. This is really an achievement and shows the great amount of care the publisher put into this product. The program succeeds in aiding with the learning of geography, and does it in a straightforward yet entertaining way. It is a well-constructed game which will keep you happily learning geography and not disappoint you.

Reviewed by Steve King

Falcon

Computer: Amiga
Publisher: Spectrum HoloByte
2061 Challenger Drive
Alameda, CA 94501
Price: $49.95

What can you possibly say about a combat flight simulator that won three Software Publishers Association awards for top software? *And* took 20 man-years to develop? *And* makes full use of all the outstanding capabilities of the Amiga? I can definitely say that *Falcon*, the F-16 simulator by Spectrum HoloByte, is one of the best, most realistic pieces of action software available to date! It is so realistic, in fact, that the military is using a program based on *Falcon* for basic flight training—quite a reversal, as entertainment programs are usually patterned after more complex, advanced simulations.

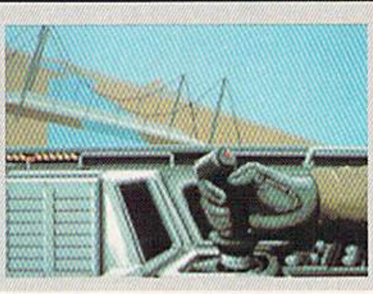
The action takes place in a finite "world" of mountains and deserts divided into nine sectors, only two of which are friendly. Those two sectors contain your airbase and several buildings used for target practice. The enemy's area contains its airfield and headquarters, many surface-to-air missile (SAM) sites, two bridges, a communications center and numerous small buildings. These are all connected by highways over which moving convoys pass by rivers and lakes.

When the game first begins, you select your rank and one of 12 different missions. At First Lieutenant level (the easiest), the plane is very forgiving and you can't crash or be shot down. As you progress upwards to Colonel, every aspect of the simulation becomes increasingly realistic. The missions also become more complex and dangerous as you advance. The simplest (Milk Run) only requires you to destroy three target skyscrapers and return to base. Grand Slam, the most complex, requires you to destroy four enemy MIGs at unknown locations. Any mission can be played at any rank, making over 60 combinations. The inclusion of a menu item, "Read Mission Disk" indicates that additional missions and geographic areas will be made available in the future (confirmed by Spectrum HoloByte).

Once you have selected your rank and mission, you proceed to the Armament Screen where you may select your weapons configuration. Aside from your internal M61-A1 Vulcan gun, you have a choice of two types of Sidewinder air-to-air missiles, air-to-ground Maverick missiles, and two types of bombs. Additionally, you can add external fuel tanks and an Electronic Counter Measure (ECM) pod which is used for jamming enemy radar. The amount of armament selected controls the weight of the aircraft and, accordingly, its capabilities and maneuverability. When you are satisfied with your weapons, click on the takeoff button and you're ready to fly.



While engaging enemy MIGs, you can even let the computer take over the flying while you concentrate on the weapons systems.



The screen then switches to the interior of your aircraft which looks similar to other flight simulators. The upper portion of the screen is a view out the front while the bottom portion is your instrument panel containing all of the necessary gauges, switches and warning lights. The most important section is the rectangular area called COMED (Combined Map/Electronic Display) which serves as both radar and map. The heads-up display (HUD) is projected on your windshield and shows your airspeed, altitude, heading and flight path ladder (angle of ascent/descent). By pressing the designated keys, you can cycle through three other HUD's—each one having a particular use depending on the type of active weapon you have selected. A fourth HUD, the Instrument Landing System, or ILS, is used for landing at your home base.

As in most flight simulations, taking off is the easy part. Just rev up your engine and pull back on the stick. At your option, the "control stick" can be either the keyboard, joystick or mouse, the latter two providing eight-direction control. While it takes quite a bit of practice to fly the aircraft smoothly, the program provides two separate sensitivity adjustments to suit your particular skill level. In the beginning, flying the Milk Run mission at the lowest rank gives you a leisurely opportunity to practice flying, landing and using your weapons. You also have the rare opportunity to survey the terrain without fear of being shot down. If you wander off the map, your friendly ground mission crew will give you explicit instructions on how to head back home. Landing the aircraft is, of course, difficult, but practice does make perfect. Unfortunately, there is no save option which would let you quickly return to a pre-designated, pre-landing position.

But the real challenge in *Falcon* is destruction of the enemy which requires skill, cunning and dexterity. *Falcon* has the usual defensive systems such as chaff, flares and electronic jamming devices to confuse radar and heat-seeking missiles. It also has an on-board radar system and threat indicator to give you the location of the enemy aircraft and missiles, as well as an indication as to whether the missiles are heat seeking or radar controlled. But above all, the better your skill at flying, maneuvering, thinking quickly and knowing which keys to press, the better your chances of victory and survival. At the highest rank, the aircraft handles like the real thing, posing many additional challenges such as avoiding stalls and excessive G forces.

The graphics are truly excellent and the animation smooth, moving at a rate of about eight frames per second. Not only do you have a view out of the front, but also the rear and sides. And unlike other flight simulators, the side views show additional operational gauges and warning lights in addition to moving exterior views. You can also view the aircraft from the tower, from an overhead satellite and from a nearby spotter plane. While engaging enemy MIGs, you can even let the computer take over the flying while you concentrate on the weapons systems. Or, if you wish, you can select the view from the

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Reviewed by Susan West

Wayne Gretzky Hockey

Computer: Amiga
Publisher: Bethesda Softworks
15235 Shady Grove Road
Suite 100
Rockville, MD 20850
Price: $49.95

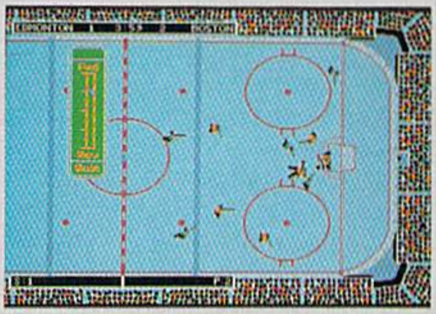
Wayne Gretzky, the National Hockey League's most prominent player *ever*, has graced Bethesda Softworks' new Amiga hockey simulation with his seal of approval. And the game lives up to the name. Great graphics, sounds and flexibility make *Wayne Gretzky Hockey* fun for players of all skill levels, and attention to detail makes the simulation a joy for hard-core hockey fans.

The program features just about every aspect of the game: real-time play, penalties (including delayed penalty calls), power plays, sudden death overtime and instant replays—they're all here. The bird's-eye view offers player or coach an excellent vantage point for setting up plays.

In the manual Wayne Gretzky talks about what makes a great hockey player, "I think the greatest players have an inner sense of the game, as if they were watching the action from high above the rink." He goes on to say that he was initially reluctant to make the endorsement, but when he saw a prototype, "I actually saw a perspective of the game similar to the sixth sense I mentioned. That's when I decided to get involved." It's this perspective that makes *Wayne Gretzky Hockey* the new standard against which to judge hockey simulations.

The rink is regulation—all lines and face off circles are correctly in place, and are accurately used throughout the game. The *WGH* referee calls off side and icing infractions with an unerring eye that NHL refs must envy.

A strip at the top of the screen contains the home and visiting teams' scores as well as a clock indicating how much time is left in the period. A strip along the bottom of the screen shows which line is currently in action and the strength of each team's line (strength decreases the longer the players stay on the ice and increases gradually as they rest on the bench). This strip also indicates how much time is left in a penalty, as well as which play a coach



The bird's-eye view offers player or coach an excellent vantage point for setting up plays.

has called or which player he is controlling.

Game Options

The game opens with the Great One himself skating into view and unleashing a powerful slapshot straight at you, shattering your monitor. The pieces magically reverse back into place, and a digitized Wayne appears on the title screen while upbeat music accompanies the disk drive loading the game.

The Game Setup Menu then gives you a multitude of options. You can choose to be player, coach or both, or you can let Wayne take over the coaching. You can set either team's skill level to high school, college, junior or pro; this option evens up a two-player game between players of varying skill. Set game speed for normal or slow (about 25% slower). Turn fights on or off; adjust a team's jersey color and select joystick or mouse input.

You can elect to play a practice game, normal game or playoff game for a period of five, ten, 15 or 20 (regulation) minutes. Practice games have only four players on each team (three forwards and a goalie), and are ideal for fine-tuning the art of skating and puck handling. Normal games have three forwards, two defensemen and a goalie, and if tied after three periods will go to one period of overtime. Playoff games have the same number of players on the ice, but will go to sudden-death overtime in the event of a tie.

The Setup Menu also gives you access to the Team Construction Menu, which lets you customize your team to the last detail. You can sort your roster (to view or print) by name, number or position. Each player has 11 attributes rated from 0–9: aggression, quickness, power, fatigue, injury, penalty, skating, passing, puck control, checking and shooting. These ratings will determine his skill once he straps his skates on and hits the ice. For instance, if you've got Yvan Cournoyer (Quickness: 9) and Bobby Orr (Quickness: 9) racing for the same puck, it's anybody's guess who will get to it first. But put Gary Doak (Quickness: 3) up against Cournoyer ("The Roadrunner"), and the Bruins haven't got a chance. Any of these characteristics can be adjusted, or you can create and save a whole new team if you wish. Incidentally, these rated attributes are totalled to indicate the team's overall strength.

The teams included on the *WGH* disk are the Boston Bruins (1970), St. Louis Blues (1970), Montreal Canadiens (1971) and Chicago Blackhawks (1971). These teams were finalists in the Stanley Cup Playoffs for the years indicated. If you're looking for Number 99 to appear on the ice, you'll have to wait for Bethesda to release their 1987 and 1988 NHL Data-Disks ($19.95 each).

Controlling a Player

If you choose to control a player, you can select any player on the ice except the goalies—just move the cursor to the player you wish to control and click the left mouse button.

You can exert a surprising amount of control over the player's moves. Using the mouse is much more fluid than the joystick. You can pass, shoot, demand a shot from a teammate, check (or body check) an opposing player, hold an opposing player or even knock him down. (Instigating rough stuff, however, is not permitted when your team is shorthanded.)

To pass or shoot, for example, hold down the left mouse button and point the cursor at your teammate or at the goal, release the mouse button to release the puck. To demand a pass, click on your teammate who is in control. He will pass immediately, so be careful not to demand a pass when an opponent could intercept it.

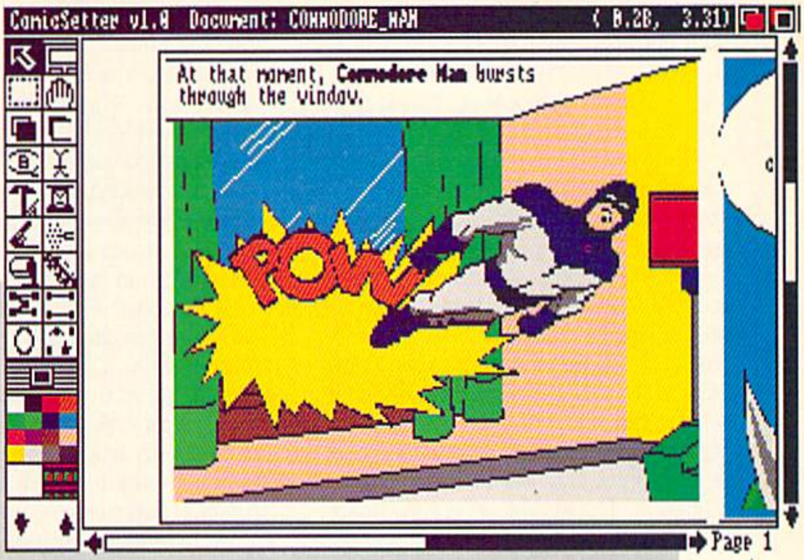
Also, keep in mind which position you're playing and stay there. If you're controlling the center, for example, stay in

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Reviewed by Russ Ceccola

ComicSetter

Computer: Amiga
Publisher: Gold Disk
2171 Dunwin Drive, #13
Mississauga, Ontario
Canada L5L 1X2
Price: $99.95
(ComicArt Disks: $34.95)



ComicSetter has a lot of nice features that take all the tedium out of drawing cartoons and comics.

When I first heard about *ComicSetter*, I couldn't wait to get my hands on it. Now, after working with the program for a few weeks, I can honestly say that it is as much fun creating comic strips and pages with *ComicSetter* as it is thinking up what goes on in those pages. Its price tag is modest compared to what *ComicSetter* can do—it's a program that certainly gives you your money's worth. I was impressed with the package and only wish that I could have had a professional comic illustrator examine the program. What's more, I only found one potential problem in the course of examining *ComicSetter*.

When you first pick up the *ComicSetter* package, you will notice that the package boasts lots of features. Such claims as "luscious color," "killer comic fonts" and "complete comic book production center" adorn the package. None of these claims are exaggerated. *ComicSetter* is one of the finest general-purpose art programs that I've seen and certainly the only one tailored to the needs of comic artists.

Although the environment is set up to produce comic strips and pages, you could just as easily use *ComicSetter* as a paint program. The one basic element of paint programs that *ComicSetter* does not have is the ability to choose graphics resolutions. Other than that and some of the more advanced techniques, *ComicSetter* is great for such work.

But let's remember what *ComicSetter* was really meant to do—design comics. To aid you in doing this, *ComicSetter* has a lot of nice features that take all the tedium out of drawing cartoons and comics. To design a comic strip on the Amiga before *ComicSetter*, you would have used a paint program to manually set up word balloons, backgrounds, characters and those wonderful sound effects fonts with words like *ZAP*, *KLONK* and *SWISH* in custom letters. *ComicSetter* includes all of these things as standard clip art or options in the program and a whole lot more.

The *ComicSetter* screen has a tool palette down the left side of the screen that can be turned off at any time to view the entire monitor. Along the top, the menu bar will pop up after clicking the right button on the mouse. The rest of the screen is used to pull together clip art and to draw your own artwork to create a comic strip. All of your work is collected onto pages. There are four magnification levels, so you can see what the finished product will look like or zoom in for close-up work. On each page, you design a scene within a panel. A given page may have as many panels as you want in whatever sizes you desire, or you can let the computer assign panel sizes and only decide how many panels across and down will be on the page. Just like the comics you see in any newspaper, the panels are used to move the story along, and the scenes you create must be interesting and integral to the story.

Once you've defined a panel, any artwork that you specify as a member of that panel will conform to its boundaries. If you choose a graphic whose limits extend beyond the panel, only the part inside the panel will be in the final product. In *ComicSetter*, you will be selecting objects a lot. In a given panel, you may have as many as 20 or 25 objects or as few as four or five. (There is no limit set; the number of objects/panels depends on amount of memory available.) In any case, the bulk of working with *ComicSetter* will revolve around selecting different objects (whether you created them or not) and dragging them into their correct positions in your comic panel. After selecting objects by clicking the left mouse button while the cursor is on them, you can resize them, recolor them, flip them, copy them to a temporary buffer, group them and do many other things. Your success with *ComicSetter* depends on how much you practice the options which will help you realize the potential of the program.

As an example, suppose that you were designing a panel with two characters in it. You would have to draw each character separately, as well as the background and any props. With *ComicSetter*, you can draw a character or prop and save it as a piece of clip art that you can use again and again. There is a temporary graphic buffer in which you can store graphic objects; you will need it more than once unless you are using only clip art.

Be very careful when drawing an object for use in *ComicSetter*. Although there is an undo option in the program, it doesn't work for all features. One of the options that you will probably use frequently is the Group Operations item of the Layout menu. If you keep the torso, arms and legs the same for a particular character in a series of panels, you can group all of the separate objects that you had to draw to form that body into one object. This way, you can call up all the pieces as one big piece and concentrate on the elements of the figure that change—like the head or face. Grouping objects together is useful, but don't feel trapped, because there is an ungroup option as well that allows you to copy over a single piece of the group for another figure and then group the pieces

for the first figure back together again without disturbing their relationship. You'll find this option most useful when you don't feel like redrawing a figure again and want to repeat or "salvage" parts of the figure that you spent so much time drawing for other uses.

Another important part of *ComicSetter* is the choice of drawing modes—structured graphics or bit-mapped graphics. For the uninitiated, bit-mapped graphics are those that are drawn pixel by pixel and can be edited on that level. Structured graphics are drawn based on mathematical formulas and can't be edited on such a detailed level—you have to edit these graphics as complete objects. Structured graphics take less memory to store and handle. Unless you need to do finely-detailed drawings, I suggest that you use structured graphics in the drawing mode of the program.

ComicSetter is very good at handling text and word balloons—one of its special features. As you know from reading comic strips, word balloons are essential to the art form. They indicate who is talking and whether the communication is spoken or thought. You can use four styles of text (plain, underlined, bold and italicized) and left, right or center justification for all text in *ComicSetter.* In addition to a number of comic fonts included, you can import fonts to *ComicSetter* and edit the text in the word balloons or paragraphs at any time. I found it very easy to make word balloons, and in no time flat I was adding speech to my creations.

ComicSetter also has a number of other features. You can superimpose a grid over your panels and even snap artwork to line up with the grid if you want to be a professional. You can change the units of the omnipresent X–Y coordinates in the upper-right corner to represent pixels, inches or centimeters. You can even find out how much memory is available for your use and switch back to the Workbench to perform other functions or run other programs. To conserve memory, Gold Disk also added a couple of new items to the menus right before the disks were produced for *ComicSetter.* These two items allow you to store a panel as one bit-mapped image and cut the link to Workbench to free more memory. I was impressed with the fact that Gold Disk was thinking carefully about its program and the consumer.

Among all of this praise, you would expect at least one bad point in *ComicSetter.* I noticed that the scaling and sizing boxes that are brought up around an object are tough to use until you get the knack of clicking the mouse in the right place. Other than this complaint, I enjoyed *ComicSetter* and found it very easy to use.

Just like the program claims, the graphics are very colorful. The characters, scenery and props really stand out and look very nice on a printout. *ComicSetter* has an extensive printer and resolution selection system to ensure that you get the best printout for your printer. The program supports Workbench 1.3 printer drivers. More important are the extra clip art disks that you can buy separately: Science Fiction, Super Heroes and Funny Figures. Each disk is packed with tons of clip art (essential for people like me who are not patient or talented enough to draw well). I was able to produce the comics examples for this article in about an hour and a half—all with clip art. Ultimately, the only thing that will help you improve your comics is knowledge of the program and expansion of your creativity. *ComicSetter* will help you every step of the way to produce first-rate comics that will please your friends, adorn your walls and maybe even get published.

Continued from page 20

rant to zap Andromedans and save planetoids and outposts.

The Commodore 64 graphics in *Deep Space* are very good. They take full advantage of the computer's capabilities to present what is commonly known as "solid-fill 3D graphics." Your ship, the enemy ships, outposts, planets, planetoids and all other objects floating in space are in 3D. These graphic representations make it easier to visualize yourself in the situations and to see where you are headed without having to refer to the map every two minutes. When you call up the command options menu with the space bar, time freezes in the game until you make a selection. Use this to your advantage to get your bearings. I was really impressed with the game visually, as I'm sure all 64 owners will be.

The only sequences that require any practice are the outpost-docking sequence and the base-landing sequence. To dock with an outpost, you have to line up your ship with a rotating pyramid so that as one special side that has an opening passes your viewport, you get close enough so that the opening's tractor beam pulls in your ship. Practice makes perfect here. You'll have plenty of practice in the Outpost mission. In all missions, you have to land at the quadrant's home base for repairs and refueling. In order to do this, you have to guide a small version of your ship that has its controls reversed onto a landing pad as seen from the perspective of someone overlooking the scene from the base's control tower. This is a tricky maneuver; but if you take it slowly, everything will work out. As you can see, *Deep Space* is an all-inclusive simulator of space combat, travel and defense. The missions are varied to give the game high replay value and the skill levels will alter the degree of difficulty that you will experience.

Central to a successful *Deep Space* mission are the inclusions that come with the game. Beginning with the package itself, which is an accordion envelope/dossier that is made to look like a top-secret package through its seal and stickers, everything that comes with *Deep Space* contributes to the atmosphere of the game. A Background Intelligence report consists of 16 newspaper clippings regarding past experience with the Andromedans and your ship's technology as well as letters from the President of the United Planets and General of the United Planets Space Force that congratulate you on your admission to the United Planets Space Force and offer a lot of hints. From the report, you learn how to attack the Andromedans and tell their ships apart, while the letters are only window dressing.

Still, these inclusions are effective. In addition to the non-essentials, you will also find quadrant map cards, a reference card and a four-page controls manual that tell you all you need to know to play the game. You will need to keep all of these things handy as you play—they help a lot. Certainly, nothing is missing from the *Deep Space* package. It is refreshing to see such a complete game for the Commodore 64.

You will find that *Deep Space,* is an intensely fun game that will have you frantically trying to keep things under control and the surrounding area in space free from Andromedan occupation. Just remember to act fast, shoot from behind, look at the planets like Saturn and Jupiter in the background to guide you and use hyperdrive and jump gates to move quicker, and you'll have no problem outwitting the alien invaders. ■

Reviewed by Jeffery Scott Hall

P.O.W.

Computer: Amiga
Publisher: Actionware, Inc.
38 W. Deerpath Road
Batavia, IL 60510
Price: $39.95
$49.95 Light Phaser Gun (optional)

P.O.W. is Actionware's second release in their Light Phaser Gun series. As one of America's top commandos, you have always wanted to go into enemy territory to rescue prisoners of war. Now is your chance—you have been assigned to go behind enemy lines and bring our boys back home.

Blasting the Enemy Properly

Before you start out in battle, you should always check your gun sights. Most of the time they are okay, but sometimes you may prefer to have the sights adjusted differently. If you have elected to calibrate your gun sights, the aiming screen will appear and crosshairs will be displayed. At this point, you should aim your gun in the center of the crosshairs and hold down the Light Phaser Gun trigger. This will cause the crosshairs to follow the gun's aim. Hit the arrow keys as many times as necessary to align the small crosshairs with your aim. Once you have finished adjusting the sights, hit the space bar to continue.

Before play begins, you will be taken to a shooting range at boot camp to determine your rank. You earn your rank by hitting as many targets as possible with the fewest misses. Conserve your ammo by firing in short bursts, and try to hit your target in the chest. There are three different ranks: Private, Sergeant and General. With each rank comes a bold new mission.

The Fight of Your Life

When you start out, you will have to make it past eight different areas inside enemy territory. These are the jungle, bridge, village, armory, swamp, radio tower, camp and beach. Depending on your rank you may have to complete some or all of the areas listed above. No matter where you are, the screen will scroll horizontally in the direction you are moving.

At the bottom of the screen you will find your status indicator which gives your current condition. Here you will find five



indicators: surface-to-air rockets, bullet clips, bullets left in the clip, your score and current health condition. All indicate the quantity you have displayed graphically on the screen. If a second person is playing, the status indicator will be divided in half allowing for each player's status to be displayed.

Your journey begins under non-stop enemy attack in the jungle. This area consists of heavy brush, trees, dirt and, of course, enemy soldiers firing at you (in other words, just your average hostile jungle). In higher levels of play, snipers will appear behind the trees, just out of your sight. To take them out, watch for them to fire—you should see a muzzle flash light up briefly. Oh, I almost forgot to mention that you will find wild animals running in the background (you'll be running too when the bullets start to fly). These animals are harmless, but if you're not careful you could hit them. If this happens, your score will be decreased as a penalty for poor marksmanship.

Once you have made it out of the jungle, you must choose your course. Your screen shows all possible routes, and an American flag which marks your current location. Make sure that you think strategically before making your choice—one false move and you're history! When you've reached a decision, fire in the direction you wish to go.

The bridge, village, armory, swamp, radio tower, camp and beach surround the jungle and hide a whole bunch of new enemies. These lifelike surroundings make you feel like you're actually there. Here you will encounter more advanced enemy troops (who appear in brown uniforms instead of green). To kill them, you must hit them directly in the chest. Also, you will have to take out enemy paratroopers who appear from time to time.

Some of the heavier weapons the enemy will use include tanks, helicopters and surveillance planes all of which are extremely dangerous and can cause either severe injuries or death. A single direct hit from your surface-to-air missiles will destroy them. Once you have used up all of your missiles, you must try to shoot the aircraft with your machine gun (requiring many direct hits) and hope for the best.

When you get killed you can continue from where you left off *if* you have achieved at least 75,000 points. However, your score will be set back to zero. The game ends either when you have completed all eight areas and achieved the rank of General, or you've been hit too many times resulting in your death. You will then go back to the player selection screen to wait for another foray into action.

Summary

The only major fault I've found with the game is the fact that it does not have a high-score board. If I were successful in winning with a whopping 250,000 points, I'd want proof of my victory, wouldn't you?

Despite this complaint, I found *P.O.W.* to be one of the most stunning arcade games I've ever played on the Amiga. Actionware's Light Phaser Gun makes game play very enjoyable. You can also play the game with a mouse, but I highly recommend the gun up against the game's fast action.

The graphics are very vivid with great detail to the background and enemy troops, not to mention the great sound effects that make you feel like you're actually there. If you liked the coin-op version of *P.O.W.* or you're just looking for a great shoot-'em-up, *P.O.W.* is for you!

Survival Strategies

- When you're in the jungle try to shoot the snipers behind the trees first, then shoot the other enemies. This will help keep your health from decreasing so rapidly. If your rank is either Sergeant or General, however, this will tend to be much more difficult if not impossible.
- Don't shoot the first aid kit while it's floating down on the parachute; if you do it will be destroyed. Wait for it to land safely on the ground, then shoot it to restore your health.
- Whenever you're in a tight situation, don't be afraid to waste some bullets or you might be wasted! Your ammo will be replaced whenever you advance to your next area, so when things heat up—blast 'em! ■

Reviewed by Russ Ceccola

Aaargh!

Computer: Amiga
Publisher: Arcadia
Distributor: Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
Medium: Disk
Price: $34.99

Let's get one thing straight from the start. The name of the game is *Aaargh!*, with three A's, an "rgh" and an exclamation point. I have seen the name of this game spelled so many ways that it even had me confused. Obviously, I'm only being facetious about a very unimportant part of the game. You, the player, don't care if there is an oogle of A's and 15 exclamation points in the title. The only thing you wonder about is whether the game delivers. The answer to that pondering is a resounding "YES." *Aaargh!* is an arcade game through and through and truly worthy of being included in Arcadia's line.

Arcadia entered the market in 1988 with three games that became hits with their fast-paced action and colorful graphics. I'm referring to *Rockford: The Arcade Game, Roadwars* and *Aaargh!* These titles presented Arcadia products to the home software market through Electronic Arts' promotion and distribution. Each of the games has its own playing method, and the collection appeals to a wide base of fans. I like *Aaargh!*—the best of the three—not only because I'm reviewing it, but also because the replay value of *Aaargh!* is very high.

In *Aaargh!* you play the role of one of two monsters in a quest to dominate the island Darance. The way you win control is by collecting the fabulous golden roc egg on top of the island's volcano. In order to reach the volcano, you have to first collect five other roc eggs of the ordinary white variety. Each of these eggs is hidden within a building, statue, fortress or structure in one of 12 cities on the island. In addition to the egg, you can also find fast food (like pizza, hamburgers and tacos) and a lightning bolt. The quicker you find the egg and exit the city, the better your chances of survival in the game.

Pulverize the aforementioned structures to find food, lightning bolts and eggs by using your own personal powers. Whether you take the role of the ogre or the dragon, your powers are the same. Only the graphics differ. Each monster can breathe fire for a limited amount of time, after which only collecting a lightning bolt will bring more firepower. Also, as any good monster must, you can stomp, push, punch and crush the structures, people and other things in any city to bring it to ruin. For the most part, you will be punching buildings and structures to find the food and other objects. Fire should be used only to begin the destruction of one of these buildings or structures.

As any good monster must, you can stomp, push, punch and crush the structures, people and other things in any city to bring it to ruin.



Aaargh! is easy to play. Each monster has his own personality that's displayed graphically. Note the differences. As far as wrecking cities goes, your moves are entirely controlled by joystick. Pressing the button spurts fire from your monster's mouth, whereas pressing the fire button while moving the joystick will make your monster punch up, down or midway or pick up an object found in the rubble. The best way to play *Aaargh!* is to walk around a city and move from house to house. Don't run all around trying to set more than one structure on fire at the same time. It won't work and takes more time. Instead, move from structure to structure and reduce it to rubble, collecting anything found before going to the next. In this way, you will cover the area a lot quicker, get a lot of points and leave the city in one piece with the egg.

At first, it's tough to get used to the controls. You have to shoot a flame of fire first before the joystick will respond to the attempted punches. Because you can punch and pick up objects only when the fire button is pressed, at least one flame will shoot out before these other functions are possible. This is a bit awkward at first, but you'll quickly get used to it. Soon you'll be walking up to buildings, shooting a flame and pounding the remains to rubble.

Only after you destroy all of a building and bring it to the ground will the objects (if any) located within appear. If it is a roc egg, pick it up immediately. If you try to destroy another building while the roc egg is on the screen, the game will move you to the next city, and your claim to that egg will be forfeited. If you find food, you may or may not need to eat it. In any case, chomp on it for the extra points. Always get a lightning bolt. A bolt increases the amount of fire within a monster. After breathing fire a number of times, there is nothing left to breathe. At this point, try to find a lightning bolt under a building. It will restore some of your power and help speed up the game if this power is used.

The only thing left as far as game play is the intermediate monster fight. After finding any roc egg, you must fight the other game monster for control of the egg. The computer will assume the role of the other monster, and the two of you must battle until one falls on the ground. The controls of the game are the same as those in the regular game, but things move at many times the normal speed. I found the best way to defeat the computer's monster is to get off one good fire ball and then hold the joystick in the direction of the monster. By holding the joystick, you will throw a steady barrage of punches without moving your character. The computer's monster will run into these punches, and you'll have full power over the egg in no time.

There are also other things trying to do you in. In particular, a catapult and wasps will attempt to reduce your strength. When the catapult connects with a direct

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Reviewed by Gary V. Fields

Fantavision

Computer: Amiga
Publisher: Broderbund
17 Paul Drive
San Rafael, CA 94903-2101
Price: $59.95

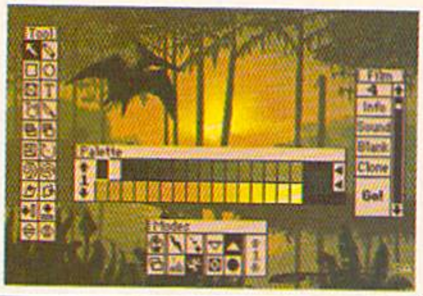
Fantavision is a powerful yet easy-to-use special-effects generator with which you can animate modest images or, providing you have the talent, turn out polished computer movies. Using the words *powerful* and *easy* together may sound like a contradiction. But in this case, both words describe the program perfectly.

Once the *Fantavision* editing screen is activated, you will see five windows: Tools, Palette, Modes, Film and the main display area. Along the top of the screen are four pull-down options: Project, Edit, Options and Text. These four let you perform major changes like load or save movies; cut, copy and duplicate frames or objects; adjust the color palette; and select which font and size to use on characters in the movie.

The Tools window contains devices for drawing and altering drawn objects. These devices include those you'll find in almost any powerful design package, like make circle, text, rotate, flip, front/back, etc. The Palette window lets you choose the colors your objects will contain as background, fill and outline. The powerful Modes window allows you to alter the way each object in your movie will be animated. For instance, you might want an object to trail a ghost image as it moves across the screen or flash off and on as it is displayed. The dimension tool allows you to draw continuous lines, solid shapes or series of dots.

The Film window is the driving force behind *Fantavision*. It includes a frame counter (to show which frame in your window you are editing). Its Info option opens a dialog box that gives you information on the active frame and lets you program the activity displayed when it is shown, like looping the frame a particular number of times. The Sound option lets you add sound to your movie. To preview your movie, you simply click on the GO! option.

Video producers will find *Fantavision* ideal for designing unique, appealing, animated clips to add a professional flair to their videos whether targeted for home or



The program disk comes with some delightful demo movies which you can examine or alter to suit your own needs.

commercial viewing. I have yet to meet a single person who, once they've played with the program a few minutes, could not create an animated sequence. This is possible because of the program's power to "tween" images. *Tweening* is the term used to describe what happens when *Fantavision* automatically generates all the images required to smoothly transform images and shapes located in one cell to their new shapes and locations in the next frame. The usefulness of this feature is easier to witness than explain.

But here's an example: Let's say you have drawn a small boy in the first frame of a film. To copy all the images to a second frame you simply click on the CLONE option. The next frame will look exactly like the first, and if you select the GO option to animate the movie, nothing will appear to happen because none of the objects in the movie have changed. To reveal the power of tweening, just move the boy to a new location and then select GO. The tweening feature creates all the required transformation images (up to 128) to make the boy appear to glide from one area to the next. Now, while in the second frame, enlarge the boy. Then clone this frame to a third frame where you add a brown beard. Clone the frame again and change the beard's color from brown to white. In total you have created only four frames, but when you run the movie, you will witness a lengthy animation showing a small boy growing up, growing a beard and finally growing old as his beard turns white.

If you are like me, you probably can't imagine animation getting much easier or better than this, but it does. At this point you have a silent movie. By moving to any frame, and then selecting SOUND from the tool box you can add sound effects to each frame. When the sound options are selected, *Fantavision* responds with a new window which lets you choose and load a sound effect into memory by simply pointing and clicking on a sound file. The program disk comes with a small collection of sounds, but you can load and use any sound effect that uses the standard IFF file format. Now when the animation gets to this frame, the selected sound effect will be heard. The program even separates sounds stereophonically.

Once you've finished, save your movie to disk. The movie's backgrounds, images and sound effects are all saved with the same file, so you don't have to worry about a program requester popping up and asking you to insert the original disk which contained the image or sound file. To play the movie all you need is a program named FantaPlayer, which is on the master disk.

The program disk comes with some delightful demo movies which you can examine or alter to suit your own needs. These demos are perfect for two reasons: (1) you can learn a lot about how to create your own movies by dissecting these, and (2) they're inspirational since they show just how good a *Fantavision* movie can be. If you've never seen the "Dinosaurs" movie—do so. It alone will sell you on the potential of *Fantavision*.

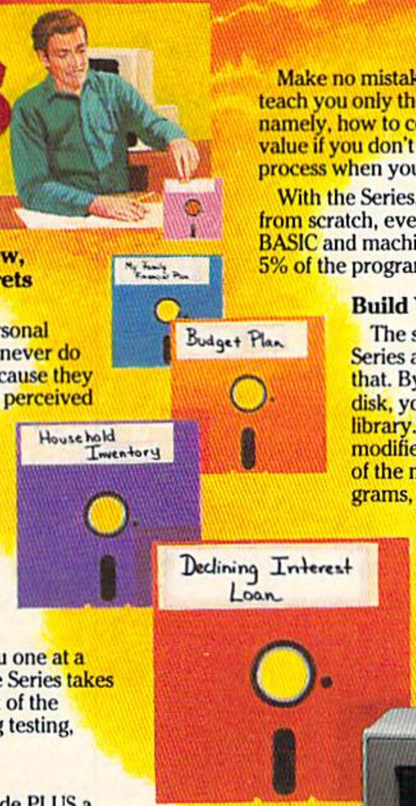
The only negative comment I have about the program is that auto-transformations cannot be performed on bit-mapped objects (like those created with most paint programs). Instead most of *Fantavision*'s magic is reserved to plotted images. Such images are created by connecting a series of points (just like those in a connect-the-dots coloring book). However, the program does allow you to import standard IFF (bit-mapped) pictures as background scenery. You can even clip out sections of these IFF scenes and define them as objects to animate—but bit-mapped images cannot be edited in any way (they can, of course, be cut or deleted).

Fantavision comes with a 64-page manual which includes two tutorials and a quick-start reference card. The disk contains two other documents with information related to enhancements made to the program since the manual was written. I think most users will like the manual's

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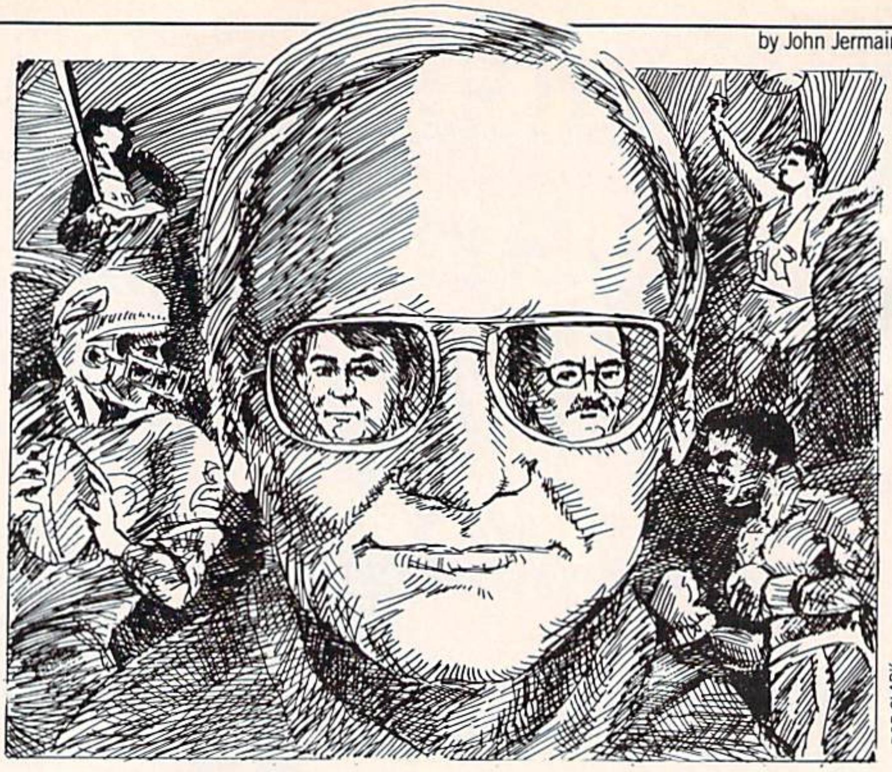
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3939 Wisconsin Avenue
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by John Jermaine

Companies to Watch

Two software company presidents—Scott Orr and Clement Chambers—talk about upcoming releases and new directions in the industry.



Season Ticket Productions

Last year the founder of Gamestar passed through the company's doors for the last time. Scott Orr was moving on to bigger and better things. He founded Gamestar in the early 1980's and merged it with Activision in 1986. The rest is history. Over the years the Gamestar name has come to mean superior sports-oriented software to players around the world. Orr now plans to start the process all over again at Season Ticket Productions (his latest venture with Data East). Scott recently told me about his work in progress and what we can expect from this new venture.

John Jermaine: Is there life after Gamestar?

Scott Orr: I certainly hope so *[he says with a laugh]*. After leaving Gamestar, I stepped back, cleared my head and examined things from a different perspective. This led to sitting down and planning out what I wanted to see in the next generation of interactive sports software.

That might sound like an easy task for someone with my experience, but the industry has really taken off over the last few years. It was a real chore, for example, to design a new breed of baseball game. I had already worked on three baseball programs at Gamestar. Then you have to consider what the competition has done and try to do something you haven't seen out there before. So I think you begin to see the complexity of the job.

It's hard to believe, but a number of things haven't been done in microcomputer baseball games yet. I wish I could tell you more about them, but they must remain a secret until that product hits the market. Let's just say our games will feature some interesting new approaches, in terms of both graphic perspective and player interface. Nothing is a "rip-off" of anything we've done before.

Jermaine: What else can you tell me about your new product line?

> "I know this is a natural evolution, but we may have gone a bit too far. In many cases, we've even lost sight of what gaming is all about."
> —*Orr*

Orr: We're currently developing three major sports titles: baseball, basketball and football. One of these programs (on the 64) is scheduled for release this fall, while the other two products will probably hit the market sometime next spring.

Jermaine: Is it true that you're working with some old friends in your new surroundings?

Orr: I guess I need to explain a few things. First of all, Season Ticket Productions is my own personal design firm. I'm the only one there at this time. There are a number of people around me, however, who took part in the launching of Gamestar after Activision acquired it.

Mark Beaumont, my partner in those days, helped me change Gamestar from a two-product company to a major player in the sports market. He's now the vice president of marketing and product development at Data East.

Troy Lyndon worked on several programs at Gamestar (including *Two-on-Two Basketball* and *Star Rank Boxing*). Michael Knox also contributed to our basketball project. These talented individuals are currently members of the Park Place Production Team (a new development group where everyone is equal). By the way, Park Place is generating one of the new programs mentioned above. Even though all of these people are doing their own thing, I suppose you could say this operation is sort of a Gamestar reunion.

Jermaine: Would you comment on the future of the software market?

Orr: First of all, I'd like to tell you what I'm seeing out there now. As sports software becomes more and more sophisticated, team and player statistics are gradually creeping into the picture. Joystick actions are also becoming more complicated, giving the user a larger selection of options. I know this is a natural evolution, but we may have gone a bit too far. In many cases, we've even lost sight of what gaming is all about.

As a designer, I'd wondered why the Nintendo and Sega systems had captured the hearts of over ten million people. After looking over the situation, I made an important discovery. All of their games have one thing in common: they're a lot of fun to play. They tend to be very simple—in some cases simplistic—but they are definitely entertaining. Considering the phenomenal sales of these games, I think there's a lesson to be learned from this rival industry.

The Commodore 64 is still doing well on the market. In fact, initial reports of

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by Larry A. Greenberg

Introduction to MS DOS



Welcome to the world of MS-DOS computing! Many of you are being introduced to MS DOS through Commodore's PC10 or COLT series, and this column is not only for you, but for all those contemplating the purchase of a PC10 or COLT who would like to know more about MS-DOS computing.

With the U.S. introductions of the PC10 and COLT series, Commodore has indeed made its presence felt in the most hotly-contested segment of the personal computer market. A fact you all may not know, however, is that PC compatibles are not new to Commodore—they have been manufacturing and selling MS-DOS computers in Europe, Canada and Japan since 1984. It is only in the past couple of years that the American market was right for Commodore's entrance into the U.S. MS-DOS marketplace.

To the experienced Commodore 64 or 128 user, MS DOS may appear intimidating, but actually, it is quite easy to grasp once one understands certain basics. First off, what is *DOS* anyway? *DOS* stands for Disk Operating System. An operating system is a collection of programs that performs various tasks necessary to the operation of the computer, such as memory allocation, input/output, running programs, etc. Every computer requires some kind of DOS to communicate with the outside world. On 64's and 128's the operating system is shielded from us by BASIC, and the specific routines that make up the disk communication part of DOS are in a ROM chip in the 1541/1571/1581 disk drives. With MS DOS, you are not shielded from the operating system—it is the means by which you tell your computer what to do.

One of the major advantages of MS DOS is that file management is far easier and does not require the use of additional utility programs. For example, the DISKCOPY command makes a mirror-image copy of a diskette—something that requires a copy program on 64's and 128's. MS-DOS computers also communicate in parallel with their disk drives, making disk input/output faster than we are used to with our 64's and 128's. Since we are not shielded by BASIC, we can communicate with the computer without requiring commands that break through BASIC (such formatting a disk, which requires the opening of a command channel).

Another difference is that when you turn on your 64 or 128, the computer goes through a quick system check and boots up in BASIC at the READY prompt. On an MS-DOS computer, when you turn on the machine, it goes through system diagnostics and a RAM test, then goes out to drive A looking for DOS, which is loaded in from disk. Three files are loaded—first, two hidden system files called IO.SYS and MSDOS.SYS (on the IBM's these are called IBMBIO.COM and IBMDOS.COM) which constitute the actual operating system, then a file called COMMAND.COM, which is the MS-DOS command interpreter. Without these files, an MS-DOS machine cannot function at all.

One question asked of me quite often is "What is the difference between IBM DOS and MS DOS?" Answer: very little. Microsoft Corporation developed PC DOS for the IBM PC back in 1981, but retained rights to market a generic derivative for compatibles. These rights are licensed to the PC manufacturer, of which Commodore is one. The only major difference worth noting is that IBM puts most of BASIC into a ROM chip, and the language extensions are loaded into memory from disk. Compatibles use a version of BASIC called GWBASIC (for all intents and purposes identical to IBM BASICA) that is completely loaded in from disk. Outside of that, the two DOS types are almost interchangeable. In fact, one of the true tests of compatibility is whether or not a PC compatible can run IBM DOS (except for BASIC). The PC10 series and COLT pass this compatibility test with flying colors.

Another common question I hear is "Can I run my 64 and 128 software on a COLT or PC10?" The answer is no, and this is the reason why: The 64 and 128 are eight-bit computers based on the MOS/Commodore 6502 CPU chip instruction set. MS-DOS computers are based on the Intel 8086/8088 instruction set and use 16-bit CPU chips. Since the instruction sets are so different, programs from one machine cannot run on the other. There are two exceptions (with caveats): One, your Commodore BASIC programs can be converted into GWBASIC programs, but this must be done manually, and in MS-DOS there are no sprites or SID chip. Two, there are utilities available to translate Commodore ASCII text and word processing files into true ASCII which can be used with MS-DOS text editors and word processors, but these utilities require the use of a 1571 or 1581 disk drive.

Commodore 128 CP/M users will find MS DOS very similar to what they already know. The command structures are generally similar, as is the familiar A> prompt (at this point, I am not taking hard disks into account). Just as in CP/M, running an executable program is as easy as typing in the program's name and pressing RETURN. In fact, it is widely remarked that CP/M is the "grandfather" of MS-DOS because they are so similar. If nothing else, that certainly made it easier for CP/M users to move to MS DOS upon the introduction of the DOS PC back in 1981/82, and certainly makes it easier for Commodore 128 CP/M user to move to MS DOS now.

Now for the obvious question: "What can I do with MS DOS?" Answer: almost anything. MS-DOS users enjoy the largest software base of any computer type especially in the productivity and business arena. Also, more and more entertainment software is being written for MS DOS as well. The amount of not only com-

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by John Iovine

Wireless Remote Control
Part 2

Last month we examined Dual Tone Multi-Frequency (DTMF) process and two DTMF chips, a receiver and transmitter. This month we will implement a few of many applications possible using this chip set.

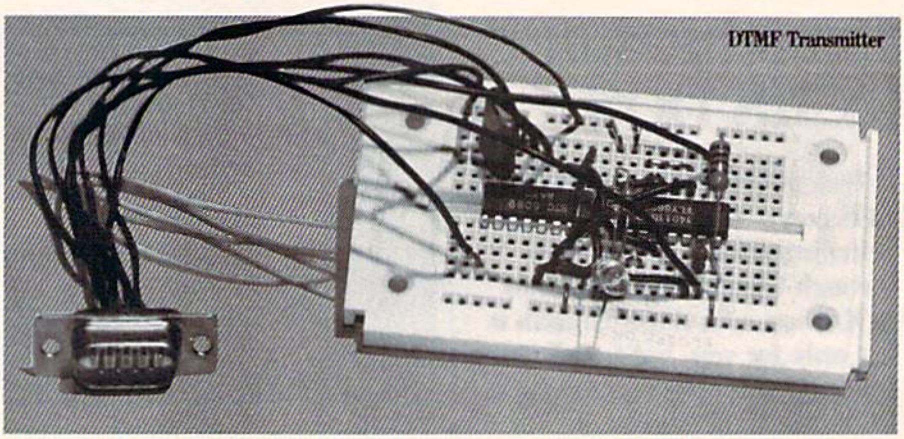
Let's begin with the simpler application of using the receiver chip interfaced to your telephone line and computer to answer the telephone and read numbers dialed via Touch Tone™ from the calling phone. A practical application of this project may be to call your home and have the computer perform some remote function. A simple touch-tone code would allow the computer to provide numerous remote functions.

Later I plan to build an X–10 control interface module for the Commodore computers that can be adapted to this project to allow you to control electrical appliances via the telephone. What's really nice about the X–10 Powerhouse system is that it uses the house wiring to send commands to remote controls connected to the electrical appliances. In addition, the remote-control modules are inexpensive and available in many national chain stores such as Sears and Radio Shack.

Telephone Circuit

This circuit has a simple ring detector, off-hook control and tone detection. The program that operates the circuit will check to see if the phone is ringing. If it is, it will pick up the phone and listen in on the line, and any DTMF tone present on the line will be decoded and displayed as its appropriate number on the computer monitor. After a short time elapses, the computer will hang up the phone and wait for another call.

The first step in building this circuit is to check the polarity of your telephone lines. It is not uncommon to find the telephone lines reversed. The green line should be positive and the red line negative. If they are reversed, don't pay any attention to the color, just be sure to put positive to positive and negative to negative. If you have modular plug-connected phones as I do, Radio Shack sells various adaptors for the phone. Use them!



DTMF Transmitter

The modular plug adaptor has spade lugs on the end opposite the plug, solder wires to the spade lugs. Don't attempt to cut off the lugs and strip the wires to use them—these wires are constructed of tin foil wrapped around fabric that is almost impossible to solder to. The modular adaptor has four wires; we are using only the two center wires that have the red and green insulation on them.

Wireless Joystick

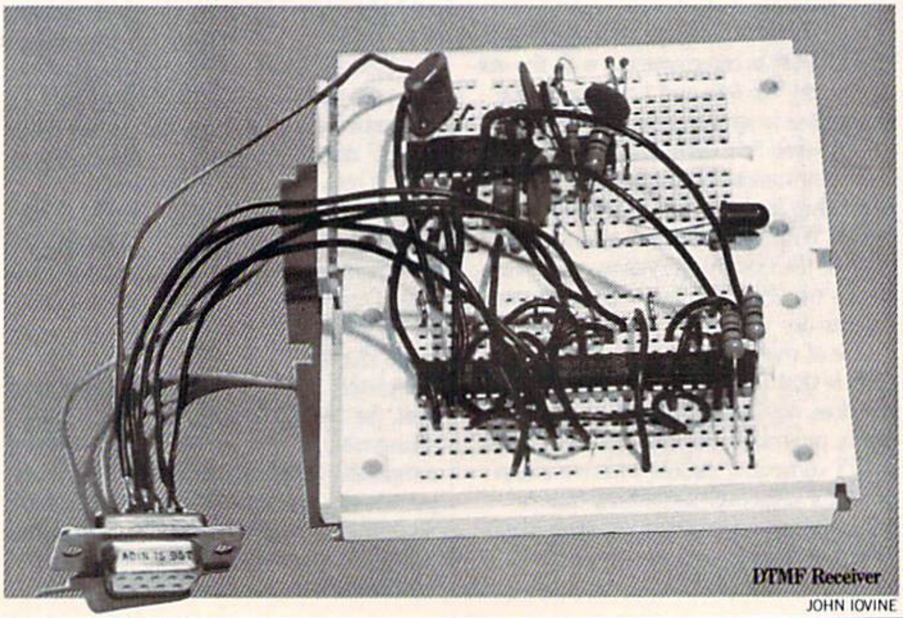
In this project we are using the DTMF chips combined with a few infrared components to make an infrared wireless joystick. Using the prototype circuits shown in the photos, I was able to transmit and receive over a distance of ten feet without any problem. Distance can be increased without much difficulty by placing each circuit in a white or light-colored housing and mounting the infrared component on the outside. By doing this, the distance you can transmit and receive will almost double. The housing acts as a reflector for the infrared components.

Direction

The joystick depicted has four movements: up, down, left and right plus the fire button. Diagonal movement isn't implemented in this model—the logic circuit required for diagonal movement would be too complex for this project. Also I don't think discrete logic devices are the right approach. As the project stands it required a few logic gates. It was easier to convert NAND gates to the needed gates on the transmitter than to purchase the correct gate. By doing this we required just one chip instead of two. More importantly, the chip is available locally whereas the other chips would have to be mail-ordered.

On the receiver circuit a NAND gate is converted to an XOR gate for the same reason. The Gate conversion drawing shows how.

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DTMF Receiver

JOHN IOVINE

Continued from page 36

Whatever the movement, the joystick remains in a latched position. In other words, if you point the joystick to the up position, the computer will continually read the joystick in the up position until you move it in another direction. This problem could be quickly solved by using tri-state logic inverters instead of standard inverters in the circuit. I didn't have time to get the particular chip for this article. If you wish to change the inverter chip to a tri-state inverter, pull a line from the StD pin on the G8870 chip and connect that to the control lines on the inverters. This will prevent the computer from reading the joystick port at any time except when it is receiving a valid DTMF signal from the transmitter.

How it Works

The transmitter has a plug to accept a standard joystick. From the plug we have some steering logic to the control pins on our DTMF chip. The DTMF chip outputs a tone through an infrared diode. The diode transmits the infrared signal.

The receiver is an infrared transistor that receives the signal from the diode. This signal is amplified by Op-Amp IC1 then fed to the DTMF receiver chip. The DTMF receiver chip decodes the tone and outputs the binary equivalent on Q1 through Q4. From here we use a 4011 NAND chip as an XOR gate from pins Q3 and Q4 to the 4028 chip.

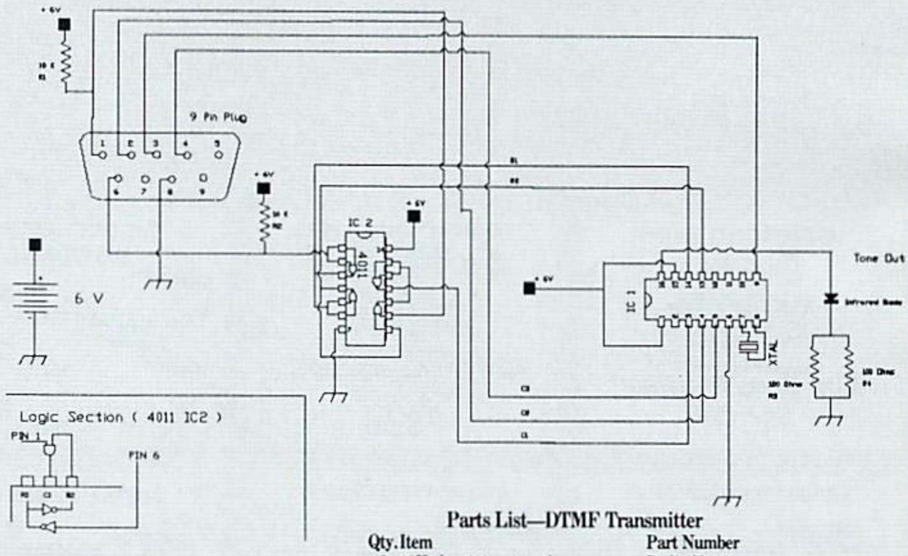
The 4028 chip is a binary to decimal chip. By putting a binary number on pins Q1 through Q4 (pins also assigned letters A through D), the chip will output a signal on the appropriate decimal assigned pin. The output of the 4028 chip is positive. Since we need negative logic to control the joystick port, all the lines are first fed through an inverter before going into the joystick port.

Going Further

Aside from fixing the joystick latch that we discussed earlier, the joystick project can be improved by implementing the diagonal movements. The quickest and easiest way to do this with the least amount of brain damage would be to code an EPROM to emulate the logic required and use it instead of discrete logic chips.

The DTMF chips are a boon to the electronics experimentalist. They are useful for remote-control devices as well as telephone devices. I didn't have the time to do all of the projects I had planned this month, so I'll be using these chips again in the future.

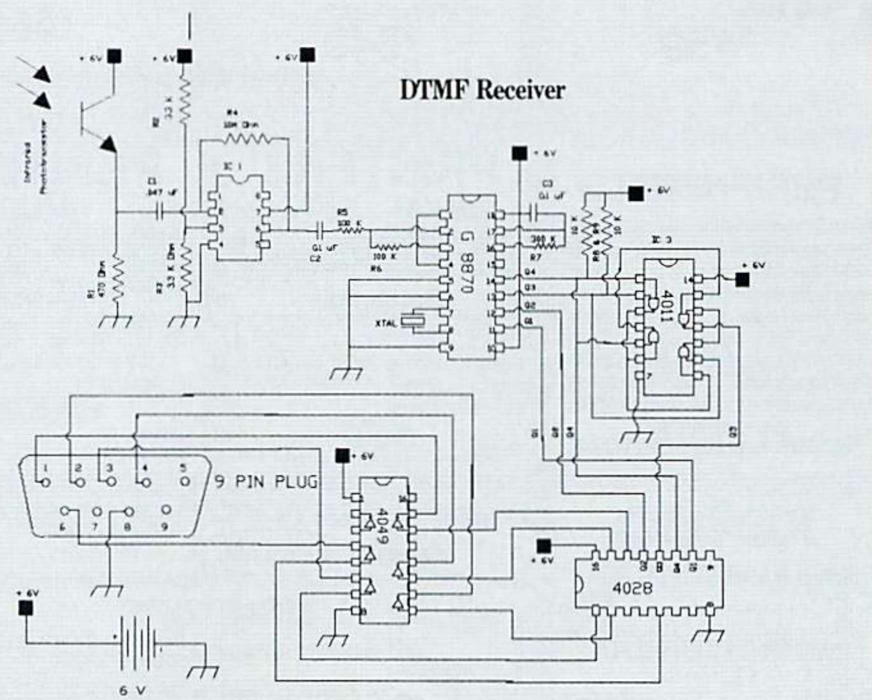
DTMF Transmitter



Parts List—DTMF Transmitter

Qty.	Item	Part Number
2	10K ohm 1/4 watt resistors	Radio Shack
2	100 ohm 1/4 watt resistors	Radio Shack
1	4011 Quad NAND Gate	RS# 276-2411
1	HO Infrared LED	RS# 276-143A
1	3.57 MHz Xtal	RS# 272-1310
1	9-pin male plug	RS# 276-1428
1	Battery holder	RS# 270-391
1	STC 5089 DTMF Generator	Images Co.

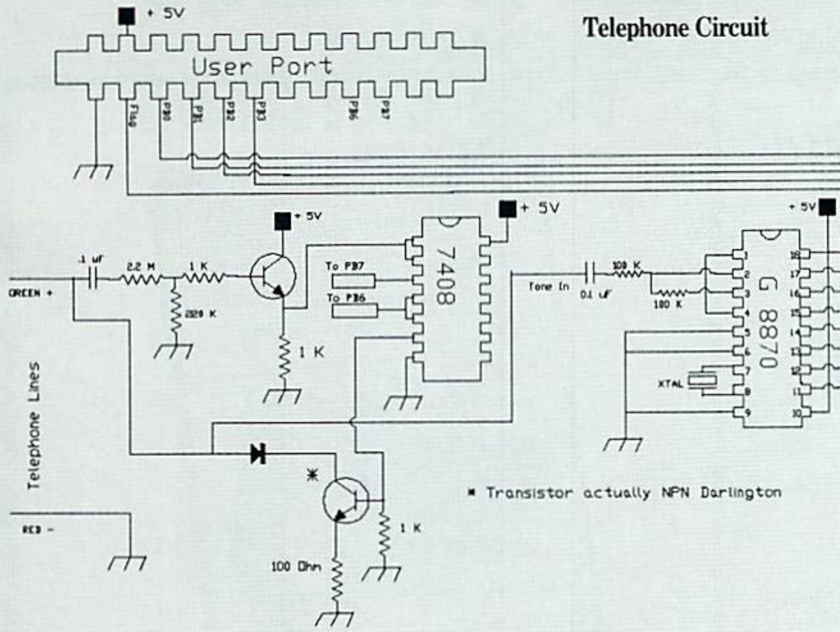
DTMF Receiver



Parts List—DTMF Receiver

Qty.	Item	Part Number	Qty.	Item	Part Number
1	IR Phototransistor	RS# 276-145	1	0.047 uF cap	Radio Shack
1	Lo Power OP-AMP	RS# 276-2330	1	4011 Quad NAND Gate	RS# 276-2411
1	470 ohm resistor	Radio Shack	1	3.57 MHz Xtal	RS# 272-1310
2	3.3K ohm resistors	Radio Shack	1	Battery holder	RS# 270-391
1	10 meg ohm resistor	Radio Shack	1	4049 Hex Inverter	RS# 276-2449
2	100K ohm resistors	Radio Shack	1	9-pin female plug	RS# 276-1428
1	300K ohm resistor	Radio Shack	1	G-8870 DTMF Receiver	Images Co.
2	10K ohm resistors	Radio Shack	1	4028 BCD to Decimal	Images Co.
2	0.1 uF caps	Radio Shack			

Telephone Circuit



Parts List—Telephone Circuit

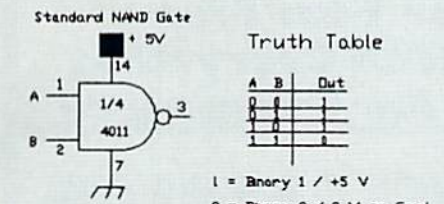
Qty.	Item	Part Number
1	2.2 meg ohm resistor	Radio Shack
1	300K ohm resistor	Radio Shack
1	220K ohm resistor	Radio Shack
2	100K ohm resistors	Radio Shack
3	1K ohm resistors	Radio Shack
1	100 ohm resistor	Radio Shack
3	0.1 uF caps	Radio Shack
1	7408 Quad AND	RS# 276-1822
1	NPN Transistor	RS# 276-1617
1	NPN Darlington	RS# 276-2068
1	Diode IN914	RS# 276-1122
1	3.57 MHz Xtal	RS# 272-1310
1	G-8870 DTMF Receiver	Images Co.

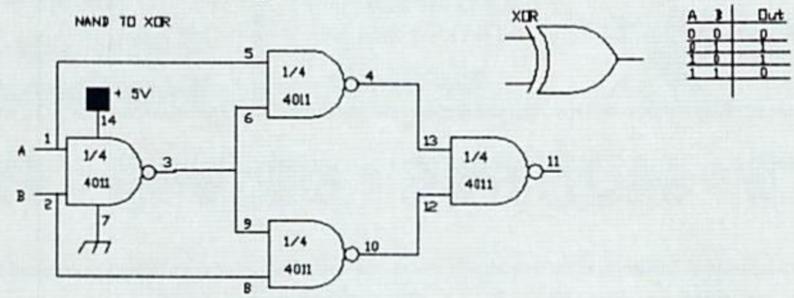
Images Co., P.O. Box 313, Jamaica, NY 11419

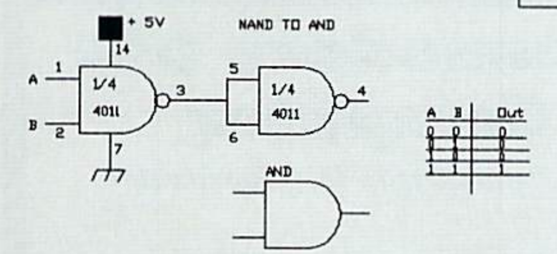
G-8870 DTMF Receiver chip	**$10.00 each**
STC-5080 DTMF Generator chip	**$10.00 each**
4028 BCD to Decimal	**$ 1.65 each**

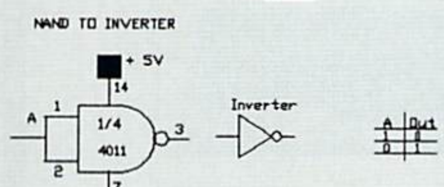
(Must be ordered with at least one of the other chips.)

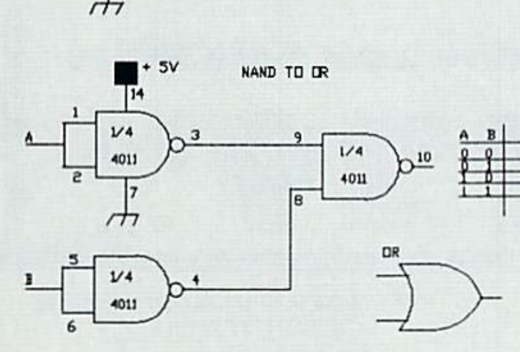
Gate Conversion Using NAND Gate











64/128 Telephone Circuit

```
10 UP=56579:REM USER PORT'CQEC
15 DF=56589: REM FLAG REG'CPOH
20 DP=56577:FLAG ADDRESS'BTXD
30 POKE UP,64:POKE DP,0'CKVC
40 RD=PEEK(DP)AND 128'DJGE
50 IF RD>0 THEN 100'DGHE
55 GOTO 40'BCLG
60 NN=PEEK(DF)AND 16'DIBG
61 IF NN>0 THEN 64'DFZG
62 T=T+1:IF T>800 THEN 300'FLIJ
63 GOTO 60'BCNF
64 NB=PEEK(DP)AND 15'DIDJ
65 PRINT NB;'BDYI
66 T=T+1'CDCK
67 IF T=800 THEN 300'DHXM
68 GOTO 60'BCNK
100 POKE DP,64:PRINT"ANSWERING
    PHONE"'CGIB
110 FOR T=1 TO 550:NEXT T'EHGA
115 NN=PEEK(DF):GOTO 60'DJUF
300 POKE DP,0:REM HANG UP PHONE'CQPC
305 PRINT:PRINT"HANGING UP PHONE"'CBMH
310 T=0:GOTO 40'CFRA
```

END

VIC-20 Telephone Circuit

```
10 UP=37138:REM USER PORT
15 DF=37149:REM FLAG REG
20 DP=37136:REM ADDRESS
30 POKE UP,64:POKE DP,0
40 RD=PEEK(DP)AND 128
50 RD>0 THEN 100
55 GOTO 40
60 NN=PEEK(DF)AND 16
61 IF NN>0 THEN 64
62 T=T+1:IF T>800 THEN 300
63 GOTO 60
64 NB=PEEK(DP)AND 15
65 PRINT NB;
66 T=T+1
67 IF T=800 THEN 300
68 GOTO 60
100 POKE DP,64:PRINT"ANSWERING PHONE"
110 FOR T=1 TO 550:NEXT T
115 NN=PEEK 1(DF):GOTO 60
300 POKE DP,0:REM HANG UP PHONE
305 PRINT:PRINT"HANGING UP PHONE"
310 T=0:GOTO 40
```

END

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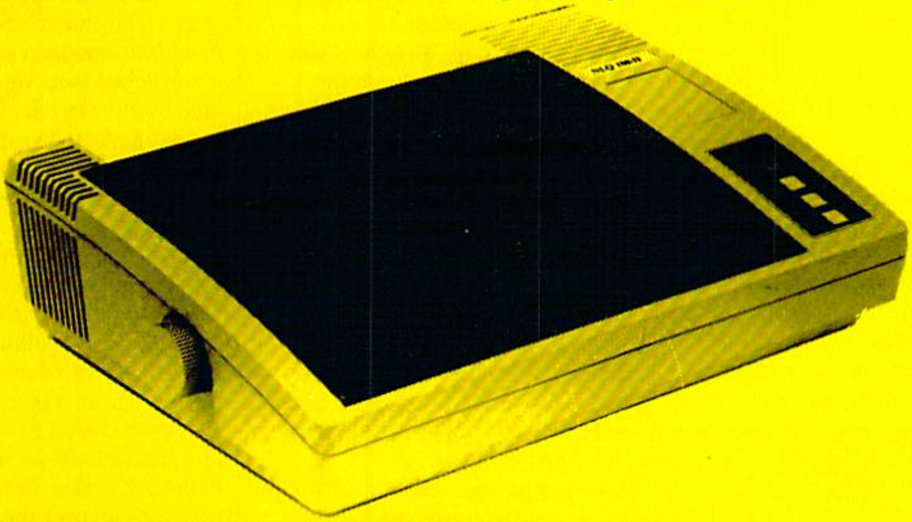
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Character Fonts
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Printing Method
Impact Dot Matrix

Printing Speed
180 CPS
30 CPS at Near Letter Quality

Printing Characters
Standard 9x9 dot matrix
NLQ 12x18 dot matrix (33 cps)
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Character sets: Full ASCII character set (96)
32 International characters
Centronics parallel port

Ink Ribbon Cartridge
Ribbon Life: 3 million characters/cartridge

Physical Dimensions
Size: 15'' x 12'' x 5''
Weight: 12.7 lbs.

Carriage
10 Inches

Maximum Number of Characters

Standard:	10 cpi	80 cpl
Standard enlarged	5 cpi	40 cpl
Elite:	12 cpi	96 cpl
Elite Enlarged:	6 cpi	48 cpl
Condensed:	17 cpi	132 cpl
Condensed Enlarged:	8.5 cpi	66 cpl
Condensed Elite:	20 cpi	160 cpl

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MIA BOSNA

by Mark Jordan

Pumping GEOS with Peter, Paul and Mark

Here's an equation: Commodore 64 + GEOS = Extra Life for 64. I'm sure we all agree with the truth in that. Here's another: GEOS + Peter Hughes = Extra Life for GEOS. Do you agree? You shouldn't. Because the equation is incomplete. The complete equation goes like this: GEOS + Peter/Paul Hughes = Extra Life for GEOS. But who are Peter and Paul Hughes?

Two true pumpers of GEOS, that's who. Many of you know them already, especially Commodore enthusiasts on the East Coast where they roam from their Boston base, spreading cheer and knowledge about Commodore computers in general and GEOS in particular to anyone who needs cheering and knowing. They are also well-known to Q-Link users, trade show-goers, *geoWorld* readers, and to many others who have been hanging around Commodore country for the past six years.

If you fit none of the above categories, it's time to introduce you formally to this dynamic duo. Allow me to do the honors: Reader, these are the Hughes Brothers. Hughes Brothers, this is Reader. Not good enough? How about this:

Peter and Paul Hughes are identical twins, presently 26 years old, living in Canton, Massachusettes, a suburb of Boston. Peter is the elder brother (by about 3½ minutes). They live on a horse farm owned by their parents. They dress alike, talk alike, both went to Boston College as English majors, and both got hooked on Commodore computers back in about 1982.

This is too formal. I'll tell you what, let's just let them speak for themselves, okay? I'll do my best to ask some questions and then stay out of the way. Starting now.

(Uh, excuse me for one final note: this interview was conducted with both brothers able to hear my questions but Paul was the spokesman. Okay, I'm out of here.)

Mark Jordan: Give me a little background on how you got interested in Commodore computers.

Paul Hughes: First we got a VIC-20, but we didn't use it too much because it had only 5K. We sold it when the 64 came out. The first graphics program we ever bought was *Doodle!* We thought it was great: we could design things on the screen and print them out on the printer. But we really couldn't draw too well using a joystick or a trackball.

Then in *Info* we saw a review of KoalaPad and in the same issue was a review of the Inkwell Light Pen which cost about $150—really extravagent for back then. But it did allow you to draw real nice freehand. We met the designers of the software for the Inkwell Light Pen at a computer show, and we were kind of beta testers of their software as it went through version 1.0 and 2.0 to 5.0.

MJ: Have you gotten much artwork published? I see you're given credit in the GEOS 2.0 manual for having designed an alternative mouse pointer.

PH: Early on, we had two pictures published. One was published in *Info* in a graphics contest—it was a self-portrait that [Inkwell Systems'] *Flexidraw* used. It was second runner-up. Then the other was a picture of a building on Boston College which we got published in *Ahoy!*

MJ: Were you artists before you got a computer?

PH: No. My brother Peter used to doodle and sketch, but we kind of liked doing it on the computer because you can edit and save it and go into zoom and do pixel detail, Do and Undo, and that type of thing.

MJ: Do you work as a team?

PH: Kind of. The nice thing is, Peter will start thinking about doing a particular graphic. I'll sit down and start it. Then I'll get frustrated and quit. Peter will go in and—he has more patience—he'll do the pixel detail. The self-portrait we did for *Flexidraw,* I started and he finished.

MJ: So it really is a self-portrait of both of you, a kind of composite drawing?

PH: Right. We kind of complement each other like that.

MJ: That might be a first. It seems kind of like you're two people sharing the same brain.

PH: Yeah, a lot of people think it's telepathic, but mostly what it is just being accustomed to being around each other. We're conditioned.

MJ: Back to your artwork: after getting some stuff published, were you ready to become professional computer graphics artists?

PH: What we really wanted to get into was black and white illustrations—diagrams, sketching, logos. We first used *Flexidraw* and then when GEOS came out we switched to it. We did some things for area businesses who wanted flyers, brochures, fonts and graphics, etc. We did things for camera stores, video stores, places that didn't want to go off to a big typesetting company.

MJ: Ah, you just mentioned the reason for this interview—GEOS. As artists, tell me what you perceive to be *geoPaint*'s strengths and weaknesses.

PH: It's very good as a high-resolution paint program, especially with the 1351 true proportional mouse input. It's as good as a Mac[intosh] for smoothness. The only drawback is they have all these menus and icons all over the screen, so the drawing area is smaller than it should be.

MJ: How does it compare to *DeluxePaint* on the Amiga?

PH: Oh, nobody can beat *DeluxePaint.* GEOS is mostly geared toward printing—it's not really a paint program because of the color cards. Some people wanted a multi-color version of GEOS, but you get half the resolution (160×200) which is fine on the screen but not on the printer. I haven't really used the Mac too much, but I like the ability I now have to convert *MacPaint* files into *geoPaint.* So we can use the vast collection of *MacPaint* public domain clip art and images. In fact, we sometimes use this capability to convert Amiga *DeluxePaint* pictures into Mac pictures and then into *geoPaint* pictures.

MJ: How does *geoPublish* stack up against page publisher programs for the Amiga?

PH: Better. [Gold Disk's] *Professional Page* (for the Amiga) is better for color separation and stuff like that. *GeoPublish* has some features the others don't have. For example, you know how you can write text vertically up the page? You can't do

Continued on page 80

Pumping GEOS

Vol. 1, Num. 9


Peter


Paul

Peter and Paul Hughes GEOS Super Users



Our first computer was the Commodore VIC-20. We did not use it much, except for games, since it had only 5K of RAM and a 22 column screen. We eventually sold that and bought a Commodore 64. We used it at first for word processing until we discovered, with the Doodle! graphics program, that we could draw on the high resolution graphic screen and then print the image to a printer. In December 1983, we purchased the Koalapad and the Flexidraw Lightpen System after seeing a review in INFO magazine. Ever since then we were hooked on computer graphics. In April 1986 GEOS was introduced. GEOS was a dream come true - a high resolution graphic environment operating system just like a Macintosh. We convinced Berkeley Softworks to send us the first release of GEOS 1.0 and 20 copies to demonstrate GEOS and sell them at a dozen New England user groups at a discount. We began a two week road trip demonstrating GEOS. Ever since seeing GEOS, we were GEOS enthusiasts.

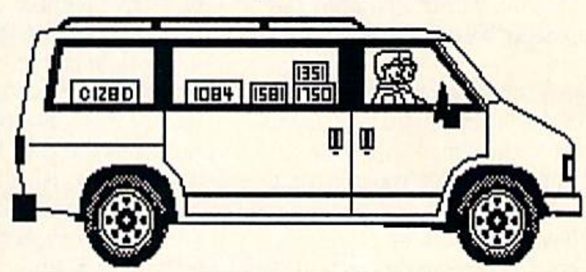
We later added to our GEOS system by buying a C128D, 1581 drive, 1750 RAM and a 1351 mouse to become real GEOS power users. We use GEOPUBLISH all the time. Even though we now have an AMIGA 500 with 2 MEGS and Professional Page V1.1, we still use GEOPUBLISH for quick and simple laser printed jobs.

We have been writing articles for GEOWORLD, the Definitive Magazine for GEOS Users, since March 1987.

Paul was a frequent uploader of quality files to QuantumLink's Graphics Area. He also had a great deal of experience with almost every graphic program on the Commodore 64 and 128. In November 1987, Paul was offered the position of SYSOP of the QuantumLink's Commodore Information Network's Graphic Support Group. He can be reached on QLINK as SYSOP PH.

We do demos of new products at local user groups and give seminars on GEOS and Graphics at Commodore computer shows. We have been collecting disks of the best GEOS utilities.

The Hughes Brothers' Traveling GEOS Show



GEOS Specific

This is a list of clip art collections for use with GEOS and magazines about GEOS that are created with GEOS.

Clip Art

Disk Art by Those Designers
Graphic Ideas by Lamb Art & Design
Clip Disk by TT Grafix

Magazines

GeoWorld
GeoSphere
Mister G's GEOS Users Newsletter

Top 5 GEOS Utilities

Paintview - Use to view geoPaint files without geoPaint. Use mouse to scroll around page.

Quickview - Use to view geoWrite files without geoWrite.

GraphicStorm - Converts Print Shop, PrintMaster, Newsroom and hi-res and Doodle! screens into geoPaint.

WrongIsWrite - Converts text between versions of geoWrite and imports and exports PETASCII and true ASCII files.

CIRCE - A war strategy game like RISK.

by Robert W. Baker

Q-Link Utilities



Explore the inner workings of the Q-Link telecommunications service with network pro Bob Baker.

Almost everyone on Q-Link can think of a thing or two he or she wishes the Q-Link software would provide. Well, if you take the time to look around, there are a number of update utilities for Q-Link software that can add some pretty remarkable capabilities. Wish you could use the full capacity of your 1571 or 1581 disk drive? Want to see a disk directory before downloading a file? How about using two disk drives? All this, and more, are currently possible.

I already mentioned the Omega-Q utility a few columns back, but there are a large number of other very handy utilities available on Q-Link. Besides the wide assortment of more general utilities, there are a few utilities designed specifically to work with the Q-Link software itself. Most of these have come from hard-working users, and not from within Quantum, but have supposedly been tested and approved for use.

Q-Menu has been around for quite some time, with the latest version (2.2) including support for all V3 and V4 Q-Link disks. This utility allows you to change your sign-on menu pointer to point to your favorite department instead of People Connection. You can even set up your disk to automatically load that department for you when you log on. You won't have to press the function key to load the department, but there will be a momentary flash of the screen as the code does its work.

Next in the line of Q-Link utilities is the Q-Drive package that provides a patch for supporting a second disk drive. Like earlier versions, the latest version of this utility allows you to change the disk drive used for uploads and downloads and save mail and text files. All department loading by the Q-Link software is still done on device number 8, as is saving mail in People Connection (for now).

If you liked having access to two drives, then you'll love the added features of the Q-DOS Patch. This utility not only gives you the capability of selecting device 8 or 9 for major disk operations, but it also allows you to display a disk directory and execute DOS commands while on Q-Link. The only hitch is that you must initiate an upload or download operation with the Q-Link software before you can access the expanded capabilities. This is a great utility from Jim Drew that does not alter your original Q-Link software on disk in any way. It acts similarly to the DOS wedge.

After you install the Q-DOS software on your Q-Link disk, you can press [CONTROL 8] or [CONTROL 9] at any time while you're online to change the active disk drive number. As a confirmation, the selected drive number is indicated in the upper-right corner of your screen following an "@" character until the next screen change. The selected drive is used for saving the buffer area (F3), uploading and downloading. All other Q-Link operations, including screen name changes and department changes require your Q-Link disk in drive #8.

The best part of Q-DOS is the ability to display a disk directory or issue DOS commands while online. As mentioned, you have to initiate an upload or download operation before having access to these capabilities. When the operation is started, Q-DOS displays a DOS MENU with the options: Continue, DOS Command or Directory.

The first option will continue the upload or download operation as normal, with all the usual Q-Link messages.

The second option allows you to enter any of the standard Commodore DOS commands. Each command is entered in exactly the same syntax as sent via the command channel (channel #15) to the disk drive. This is basically the same as the familiar DOS wedge syntax, but without any special prefix character.

The third option is probably the most useful, and most often-requested capability, for just about any Q-Link user. This option provides a directory listing that you can pause with the space bar, or stop with the RUN/STOP key. Now you can easily find that file you wanted to uploaded but just can't seem to remember how to spell. And you don't have to log off the system anymore to find it!

Q-DOS supports all the Commodore disk drives, including the 1541, 1571, 1581 and even Commodore compatibles. There's even a fix for the 1581, so you can use the full capacity of the disk drive with over 3100 blocks free. Installing the Q-DOS software does not modify your Q-Link software on disk, as mentioned earlier. Plus, you don't always have to use it once it's on your Q-Link disk. If you don't want to use the patch, just load your Q-Link software like normal and Q-DOS won't exist.

If you have a 1571 or 1581 disk drive but don't really want all the capabilities provided by Q-DOS, there are a few other utilities around that might interest you. QPatch 1571 gives you 1328 blocks free per disk in 1571 mode, or you can still use the drive in 1541 mode if you want. However, you still have to use 1541 format disks for uploads; the fixes only apply to downloading on the 1571.

Q-Patch.1581 creates a disk partition that protects the first three sectors on track 18. These three sectors are the ones used for the BAM and Directory blocks on a standard 1541 format disk. Protecting these sectors allows uploading and downloading on Q-Link with your 1581 drive, and stops the Validate command from freeing them unintentionally.

Although not really for the Q-Link software itself, one of the latest Q-Link-related utilities of interest is the Omega-Q

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by Shay Addams

The Best of CES

News and opinion from a leading explorer of those fantasy realms called adventure games.



DENISE FALESKI VITOLLO

Of the dozens of new adventure games I got killed in, lost in and hopelessly stuck in at the Consumer Electronics Show in Las Vegas this January, two Commodore 64 titles towered over the crowd like redwoods in a bonsai grove: *Might and Magic II: Gates to Another World* and *The Magic Candle.* At New World Computing's booth, Jon van Caneghem led me through the second game in his series, which supports characters from the first game while adding a host of new features.

Among the most impressive of these is the way the game links your characters' skills to other features such as auto-mapping—which cannot be accessed until you've mastered your Cartography skill. And the map you'll see not only shows every square you've stepped on, but also reveals whether it's trees, water or some other terrain type in the land of CRON, where the tale unfolds. Animated graphics are now on board, and the sound effects are outstanding.

Though combat has changed little, a novel option (the first of its kind) allows you to change the difficulty setting during the game. The four settings from Inconspicuous to Thrill Seeker, determine the number and ferocity of the monsters you'll encounter. There are lots of new spells, but this time you don't automatically "learn" all the spells in a class upon attaining a new level—some spells must be obtained at various places or from people you meet during the game. Countless mini-quests are offered for your party to fulfill while seeking to accomplish the main goal (which, only hinted at in the manual, is gradually revealed as you explore the dragon-beleaguered land of CRON). This is clearly one of those rare cases in which a sequel turns out even better than the original game.

Burning *The Magic Candle* at Both Ends

I can tell you more of the plot in this five-character role-playing game from Ali N. Atabek, who did *Rings of Zilfin* a few years back. It's not another "see and slay the Evil Wizard," for your goal is to *prevent* something from happening: the demon Dreax, trapped inside a giant magic candle guarded by four Mages, is on the verge of escaping when the candle burns down, and through a series of quests you must find a way to keep Dreax from emerging to lay waste to the land of Deruvia.

You get an aerial view of the countryside, but interior scenes are depicted with an oblique-angle view that provides an effective 3D feel. The combat and magic system contain both new and familiar elements. Each character in a battle is represented with his or her own icon, and you move a cursor around the screen to aim missile weapons and spells at specific monsters. But watch it—they will sometimes jump out of the way at the last second, which makes combat livlier than in many games. As in *Rings of Zilfin,* the magic system involves finding and eating certain mushrooms, but this time there are two dozen spells.

Meanwhile, Back in Various Other Fantasy Lands . . .

Rainbird's *Fish* and *Corruption*, a pair of humorous graphic adventures for the 64 and Amiga, looked like a lot of fun (especially *Fish,* in which you play an interdimensional secret agent who spends a lot of time in a goldfish bowl).

But the big news is that Magnetic Scrolls will soon be incorporating animation and doing more to come up with a "new style of adventure."

If *The Last Ninja*'s quirky interface drove you up the wall, you'll be pleased to hear the interface was cleaned up for *Last Ninja II* (but you still can't save a game in progress—which I can't understand, since you can do so on the IBM version).

Epyx has a new version of *Omnicron Conspiracy* (fresh graphics, smoother interface, more substantial story and script), and lots of action adventures. For amateur detectives, they imported *Devon Aire,* a British mystery with puzzles and animated characters.

Sir-Tech's *Wizardry III* is out for the 64 with *IV* and *V* planned for later this year.

Bonnie Barber of Q-Link (the on-line network for Commodore users) unveiled Adventure Link, a series of menu-based all-text adventures. There were just three games on the menu, with names like "The Sword of Xylos," but players will soon be able to write new ones and upload them for everyone to play.

Infocom's *BattleTech*—an unusual role-playing game in which you command a battle robot via a unique interface—wasn't showing, but look for it soon on the Commodore 64.

PolarWare swore me to secrecy about their next two titles, but look for a couple of intriguing new graphic adventures soon.

Electronic Arts was running a video of clips from Dynamix's *Project Firestart,* a Commodore 64 science fiction RPG with multiple missions, a time factor and lots of animation, but most of their new adventures were from affiliates. *Azure Bonds* the *Pool of Radiance* sequel, should be available for the Commodore 64 any day now, as well as *Hillsfar* and *Heroes of the Lance*, both action adventures. However, only a demo of *Hillsfar* was up on the screen.

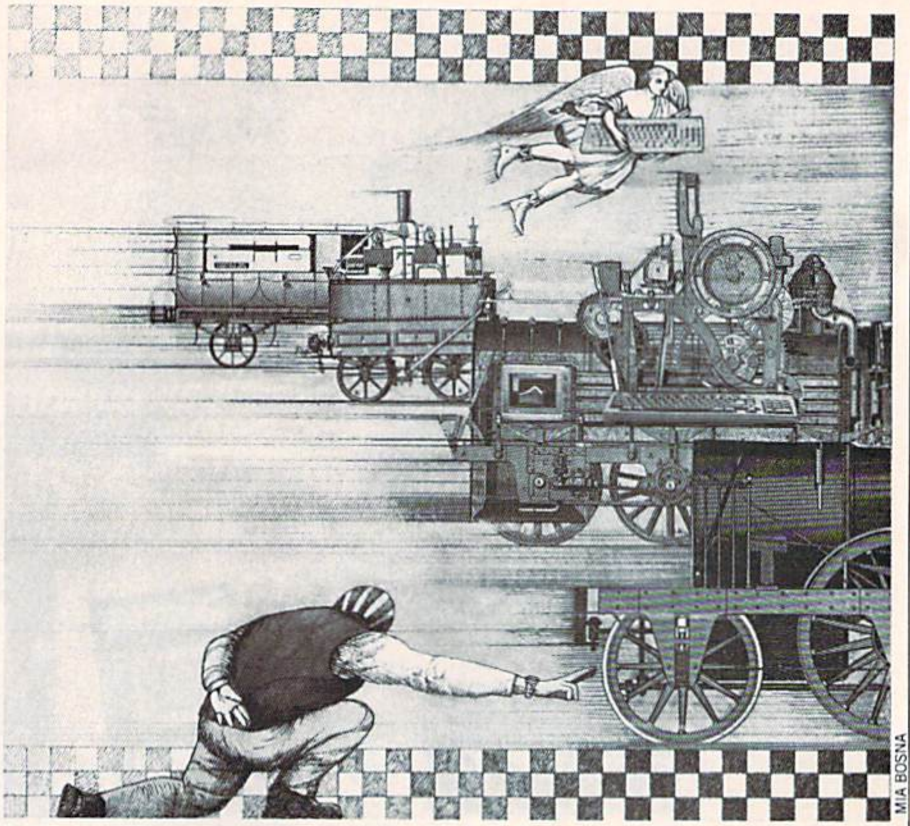
Some companies were telling more than they were showing at CES. Interplay's *Meantime,* which supports *Wasteland* characters, was not being demonstrated, though it should be available for the 64 sometime this summer. Another new fantasy RPG, this one from Steve Peterson, was planned for an earlier release, but Interplay president Brian Fargo still hasn't settled on a name. (He did mention that *Battle Chess*, the number-one selling Amiga game, is going to Nintendo format.)

Before leaving the show, I finally played my first Nintendo game—*Ultima III* (available from FCI). Lord British told me every bit of the original game is on the cartridge, and that *Ultima IV* and *V* will

Continued on page 94

by Matthew Leeds

Hard Disk Essentials



Performance, power, speed, convenience—there are a lot of reasons for buying a hard drive for your Amiga. Aside from additional memory, there is no other peripheral you can buy that has the potential to change the way you work in so great a fashion. Freedom from switching floppies, freedom from choosing which programs get to live on the Workbench disk, freedom from swapping disks to run another program on your multitasking computer.

With that freedom comes a certain responsibility. When you can store 20MB or more of data on a single device, you need some means of retaining that data should the device die. Oh yes, it may come as a great shock to learn that the hard drive you spent your vacation money on is mortal, but it's a far greater shock to have it die and take your last three month's work along with it.

Backing up the data on your hard disk is one of those sometimes unpleasant chores, like having your teeth cleaned, that is easy to put off but can come back to haunt you if you delay too long. The right software can make it an easier task as can developing a few good habits for safe computing.

Virtually all hard disk backup programs will let you make a full backup of everything on your hard disk to a set of floppies. This generally requires about one floppy per megabyte of data on the hard disk. Some backup programs use compression techniques to store more than 880K on a floppy, generally by not using standard AmigaDOS file formats. This can be an advantage, as it can drastically shorten the amount of time it takes to do a backup but may not allow you to restore only a single file if you desire.

The first time you back up your hard disk you would create this type of complete backup. As it is creating this full backup, a good program should be capable of also setting the "archive" bit on all the files on your hard disk. The archive bit is used to keep track of files that have changed since the last time you created a backup. The next time you decide to back up your hard disk you can make an incremental backup. This is a disk, or set of disks, that contain the files that have been added to or changed on your hard disk since the last backup. It may require only a single disk or a small set. Each time you add to or substantially change the files on your hard disk you should make an additional incremental set. When your incremental sets outnumber your full backup it's time to make a new full backup.

You should also be able to make selective backups. Once you've made a full backup of your hard disk, you may decide only to make additional backups of a single data directory, or of files with creation dates past a specific time. These can be thought of as incremental backups in a sense, but they are flagged by an item of your choice, not the archive bit.

A good backup program will automatically format and name the disks it uses in creating a backup. It is, however, still up to you to correctly label the disks. Also, a good backup program should be able to recover if it finds that one of the disks you are using will not format correctly. It should also be capable of checking the data it writes to the floppy (validation) to see that it is correct.

With any luck you will find that you never need to use that set of backup disks you create and update every week or so. Should the unthinkable occur—that wonderful little message in the upper-left corner of your screen telling you that your hard disk is no longer readable—you'll get a chance to find out just how reliable your backup program is.

What's that you say? Of course it's reliable? Who would ever think to test their backup program's ability to restore its lovingly-stored cargo of data? Isn't that like test jumping a parachute? If it doesn't work, it's too late to have found out.

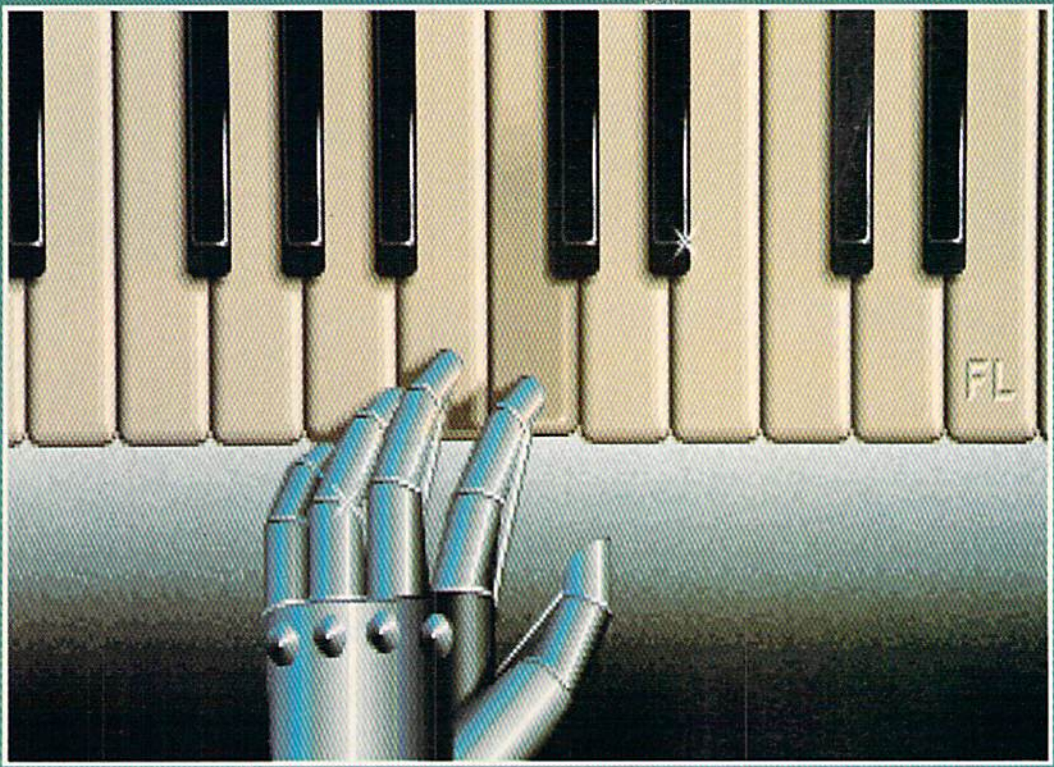
Unfortunately, it turns out that some hard disk backup programs are better than others, and a few are no better than no program at all. I recently tested four of the more prominently-advertised hard disk backup programs. I looked for ease of use, a full set of features/options, reliability and speed. The results surprised me, and they may surprise you.

My test setup was an Amiga 2000 equipped with a Great Valley Products' hardcard with a 40MB hard disk, 3MB RAM and two floppy drives. With each program I attempted to back up a portion of my hard disk, a directory with many files and sub-directories, around 3.5MB. The directory was assigned a logical name to simulate its being a separate device. I also created an empty directory and assigned it a logical name to use as a target for restoring the backup.

Continued on page 64

Amiga Graphics Contest

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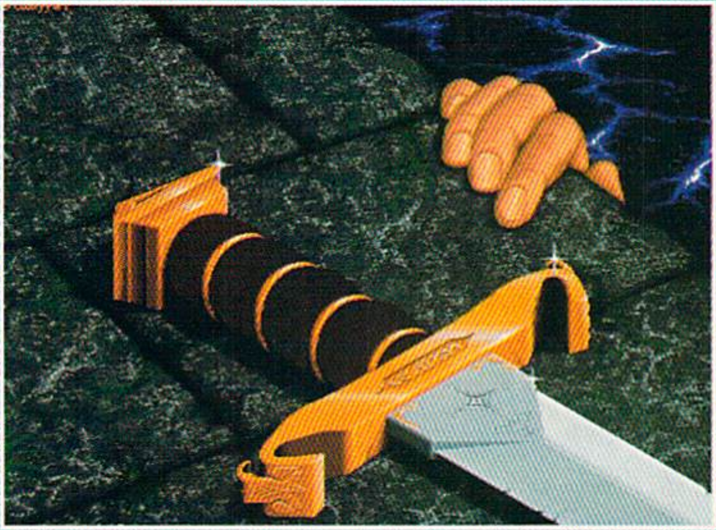
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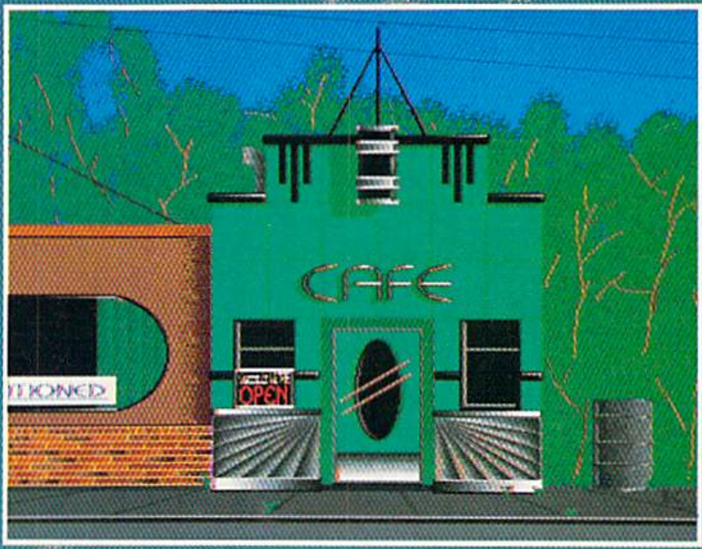
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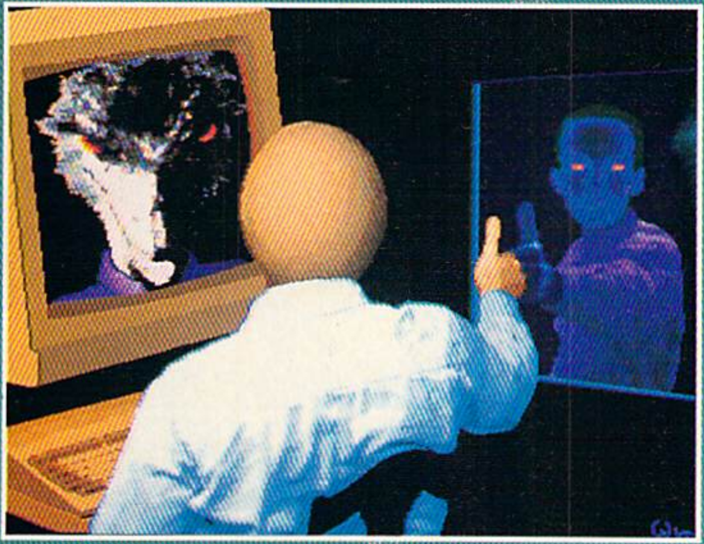
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DeluxePaint II Elsmere, DE

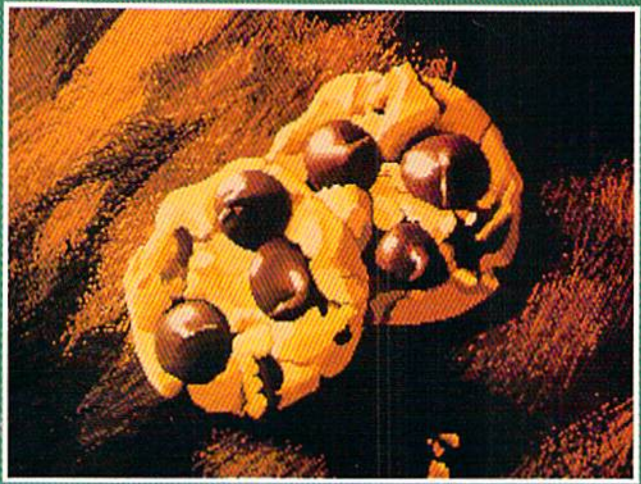


Cafe by Kelly Thompson
DeluxePaint II Saskatoon, Saskatchewan



The Self-Portrait Artist by Brian Wind
Digi-View Gold, *PIXmate, Photon Paint, DeluxePaint II, Sculpt 3D* Greenwood, IN

HONORABLE MENTION



Chocolate Chip Cookies by Diane R. Cassidy
DeluxePaint Lake Oswego, OR



Subject by Alex D. Deburie
DeluxePaint Sterling Heights, MI



Eclectus Parrots by Jacquelyn J. Dinora
DeluxePaint II Lanham, MD



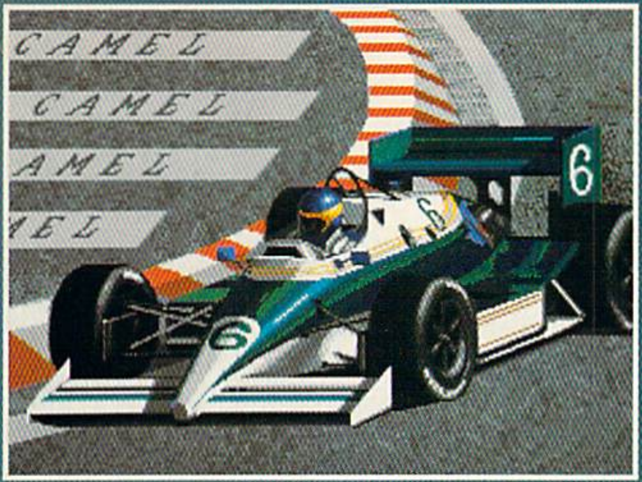
Robo Paint by Matt Farrell
DeluxePaint II Selden, NY



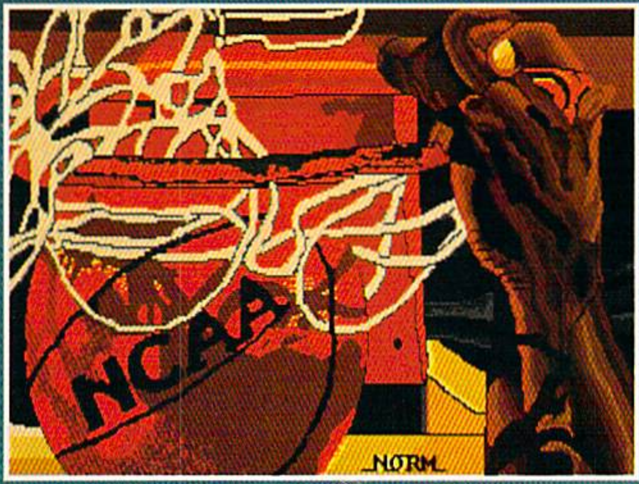
Go Forth . . . Fly Free by Paul C. Gurcules
DeluxePaint II, Photon Paint, Digi-Paint, Digi-View Coatesville, PA



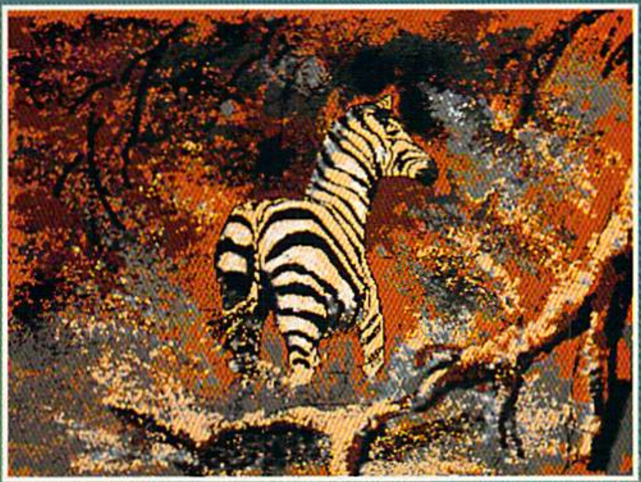
The Storm by Ken Harris
DeluxePaint Blackfoot, ID



Racecar by Roy E. Holes
DeluxePaint II, Digi-View — Blue Jay, CA



Slam Dunk by Norman Jurado
Photon Paint — El Paso, TX



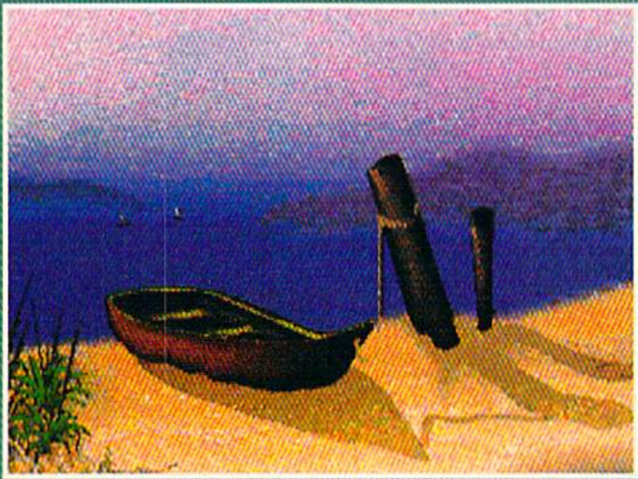
Africatwo by Robert C. Morris
DeluxePaint II — Sarasota, FL



Stepping Stones 4 by Gary N. Nash
DeluxePaint II — Lynchburg, VA



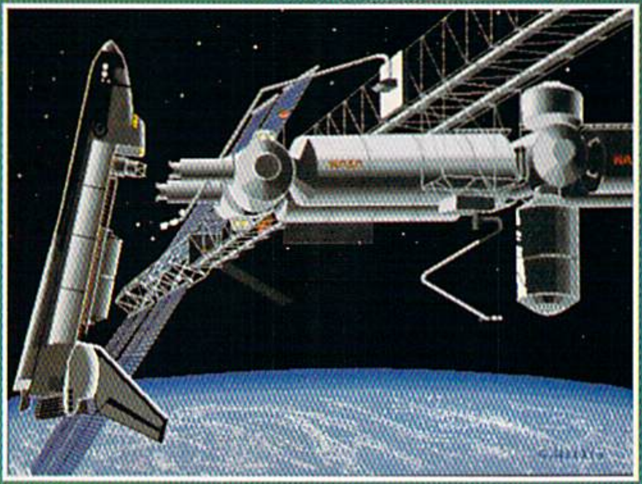
Gateway by Geoffrey Potts
Photon Paint — Eugene, OR



Dawn Breaks by David W. Powell
Digi-Paint — Gulston, KY



Robohawk by Pedro J. Taboada
DeluxePaint El Paso, TX



Station Freedom by Gary A. Willis
DeluxePaint Ft. Washington, MD



Flag by Madeline Wright
DeluxePaint Portland, OR



Sailboat by Scot A. Lippencott
DeluxePaint Crucible, PA



Bison by Anne Cole
DeluxePaint II Albuquerque, NM

Commodore 64 Graphics Contest

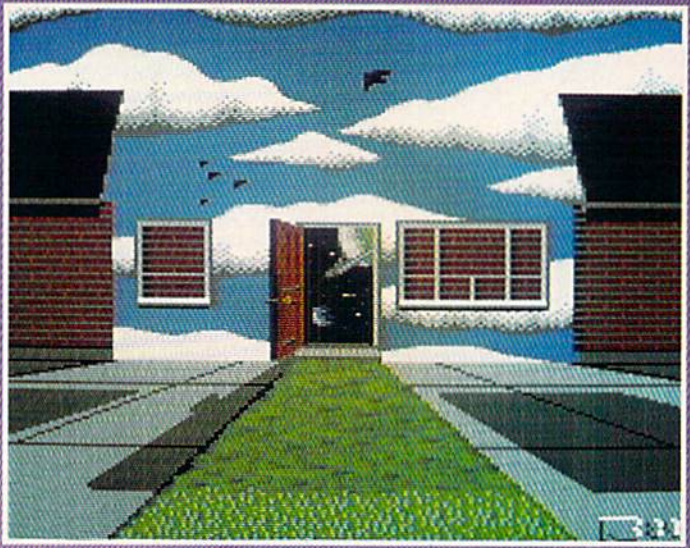
GRAND AWARD: $500



JESSE HULSE

Saturday Morning *Koala Painter* — **by Steve Vitale, Runnemede, NJ**

RUNNERS UP: $100



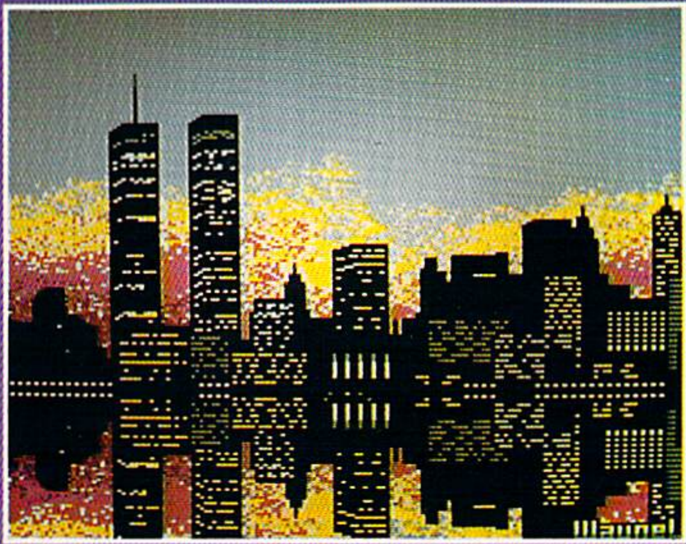
What Do I See, the World or Me? by Rene Boutin
Advanced OCP Art Studio Montreal, Quebec



Swan Lake by Dario Hondoy
Koala Painter Washington, D.C.



Flying Free
Advanced OCP Art Studio
by Stephan Kozak
Brampton, Ontario

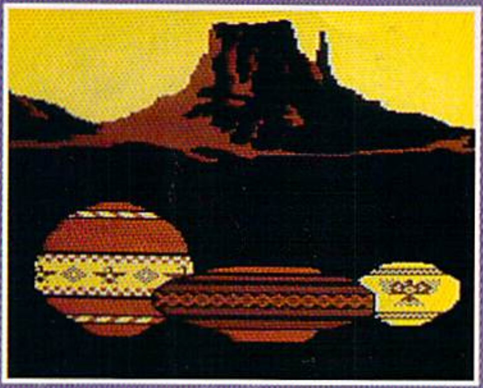


New York
Koala Painter
by Wayne V.H. Lorentz
Highland Lakes, NJ

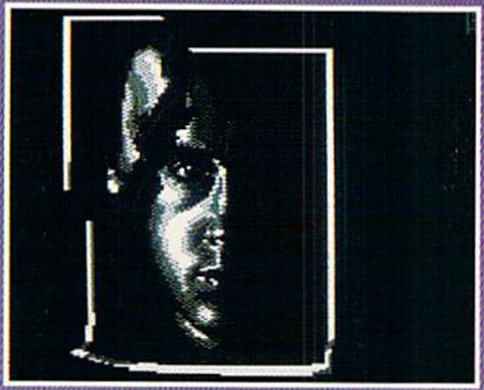


Irish Castle
Koala Painter
by Jack H. Medjallal
Encino, CA

HONORABLE MENTION



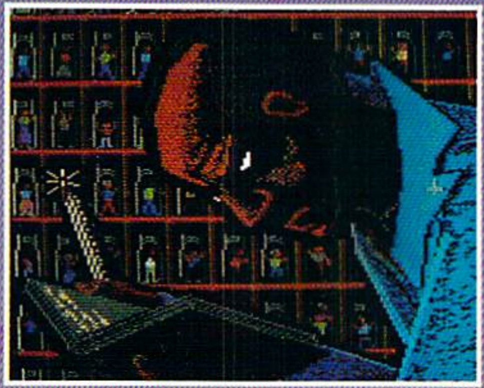
Desert Art by Scott A. Gibson
Advanced OCP Art Studio New Oxford, PA



Imagine by Jim Karadeniz
Koala Painter Don Mills, Ontario



Dreamscape by Ted R. Gooding, Jr.
Koala Painter West Covina, CA



Inventory by Bryant Babin
Koala Painter Gonzales, LA



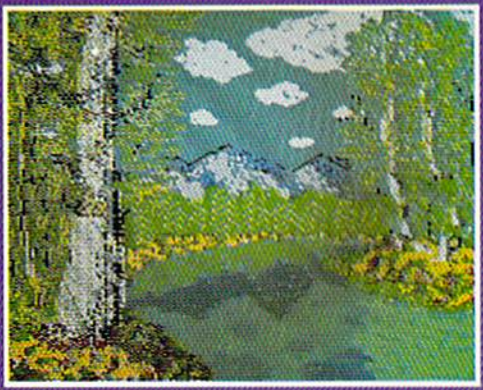
Windsurf by Steve Jones
Doodle! Key West, FL



Cat.Memory by T. Preston Chesser
Koala Painter Pensacola, FL



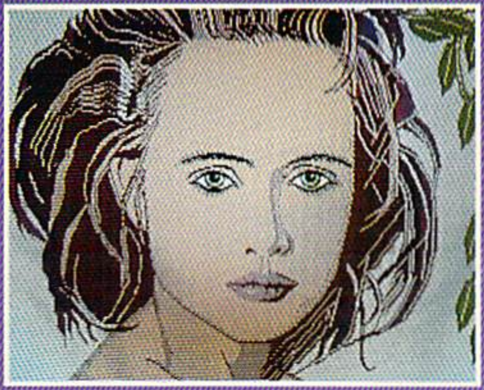
Flowers in the Dark by Felipe Acosta
MicroIllustrator Buenos Aires, Argentina



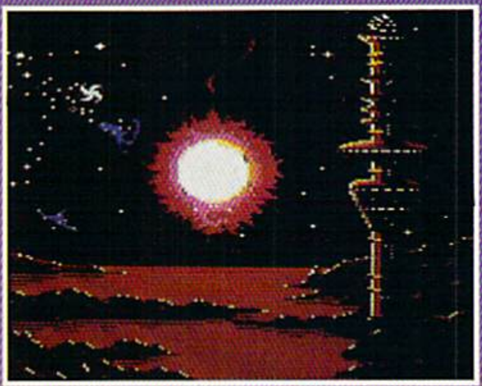
Spring Forest by John Skiba
Artist Lemont, IL



Metallic Dreams by David Partin
MicroIllustrator Evans, GA



Winsome by Roger Vogt
Doodle! Fort Dodge, IA



Stellar Outpost by Jerry Perez
Koala Painter Fayetteville, NC



Clown by Harold R. Simmons
Advanced OCP Art Studio APO New York, NY



Koi 2 by Christopher Waugh
Koala Painter Los Angeles, CA

Confessions of an Amiga Addict

by Gary V. Fields



Let me publicly confess that I am hooked on some Amiga games—I call this compulsion Amiga Addiction. In the truest sense of the phrase, some of the software released for the Amiga should be labeled habit forming. These are the games which seem to lodge in your subconscious where they tempt you to boot up for one more try, one more adventure, one more challenge. Only a small percentage of the hundreds of Amiga games I've tried possess such addictive power—but oh how I do enjoy those few!

Are you an addict? *Addiction* is defined in *Webster's* as the compulsive use of any substance which is habit forming. Most of us associate a habit-forming substance with alcohol or some other mind-bending drug—bad things. But we can actually become addicted to things which are neither injurious to our health nor socially frowned upon. Some of us are addicted to work, sports, chocolates, ice cream or even Woody Allen movies. And others of us are addicted to more sensible substances like our computers and the software they operate. None of which are necessarily bad for us—as long as we practice moderation.

Defining an Addictive Game

For a game to be classified addictive it must possess but one quality—it must inspire in the user an irresistible desire to return to it time and time again. Addictive games don't necessarily have the best graphics or sound effects; they may not be the newest releases, carry the highest price tags, or come from leading software houses. To be addictive, the software requires only a fine mixture of fun and challenge which is not depleted by continuous play. This is a formula which every programmer attempts, but few accomplish.

Of course addiction is usually a personal preference—while some users quickly get hooked on text adventures, others can only get high on space arcades, fantasy play or sports simulations. Which games prove to be addictive to an individual depends upon the user's mental makeup and chemical balance. I find simulations and strategy games more addictive than text adventures or most arcade games. But no matter what "your poison," once an addictive game gets in your blood, going without it can be like going cold turkey.

The Tell-tale Signs of Amiga Addiction

In studying AA victims I've been able to identify ten physical and psychological manifestations which most often accompany the affliction:

1. Unexplained weight loss

Because many users refuse to allow food or beverages around their computer, some show the early signs of malnutrition. It is not uncommon for a heavy user to go from a 40-inch waistline to a 32-inch waistline in only a few months.

2. Unexplained weight gain

On the other hand, some users insist upon keeping food and drinks within reach as they enjoy their software. As a result they can consume large quantities of starchy, calorie-packed foods without consciously tasting the treats. For such addicts a waistline explosion of two to ten inches is not uncommon.

3. Red eye

This symptom is most often noticed by family members, friends and co-workers before noon. It is brought on by late-night bouts with computer games which deprive the user of a healthy amount of sleep. If diagnosed early, this side effect of AA can be treated.

4. Absenteeism

As addictive games begin to spin their web, it is not uncommon for the user to lose track of time. This fog can affect the addict for only a few minutes or several hours. During these lapses it is not uncommon for the user to miss meals, deadlines, school buses, anniversaries or even entire work days.

5. Poor personal grooming

As the attraction to the games becomes more binding, some users have been observed to lose interest in personal grooming. One of the first signs that the addiction has progressed to this stage is the failure of the addict to comb his or her hair, or in adults to shave (both male and female).

Fortunately, this side effect of AA is easily corrected. Some addicts have found that a glance into a small mirror beside their monitor is all the cue they need to attend to personal hygiene. In more severe cases, family members (most often mothers) may have to reinforce the need for personal grooming with a whack to the back of the addict's head with a wet washcloth and directions to the bathroom.

6. Increased irritation following electrical outages

Normally the effects of AA are not considered dangerous to either the patient or those around him. But if an addict does harbor violent tendencies, they will most often surface during electrical outages, especially if several outages are repeated in a short span of time. Because a break in electrical power will cause a computer's memory to fail, the gamer will lose control of the game, and more often than not will have to start over. The accompanying frustration can drive some addicts to a 16-bit wrath, clinically labeled "joystick equilibrium." In the milder forms, the addict may simply set all the system's switches to off and leave the room in a huff, but in advanced cases addicts have been known to jerk the joystick out of its port or worse. Fortunately, the consequences (a fat repair bill) usually restrict such inadvisable activities to one-time events, thus such temper tantrums are often self curing.

7. Joystick twitch

It is not uncommon for addicts to develop a twitch in the finger or thumb which controls the fire button on the joystick or mouse. This ailment manifests itself most often in situations in which the addict is placed under stress.

For example, in a traffic jam the addict's firing digit may involuntarily begin twitching in a subconscious effort to clear the traffic ahead. A more common occurrence of this twitch can be witnessed by students or people in the work force while handling ballpoint pens. When they are faced with a dilemma, their thumbs will automatically begin triggering the cap mounting. Studies have shown that male addicts suffering from this affliction often develop thick callouses on their thumbs, while female addicts often have broken nails on their joystick hand.

8. Glazed stare

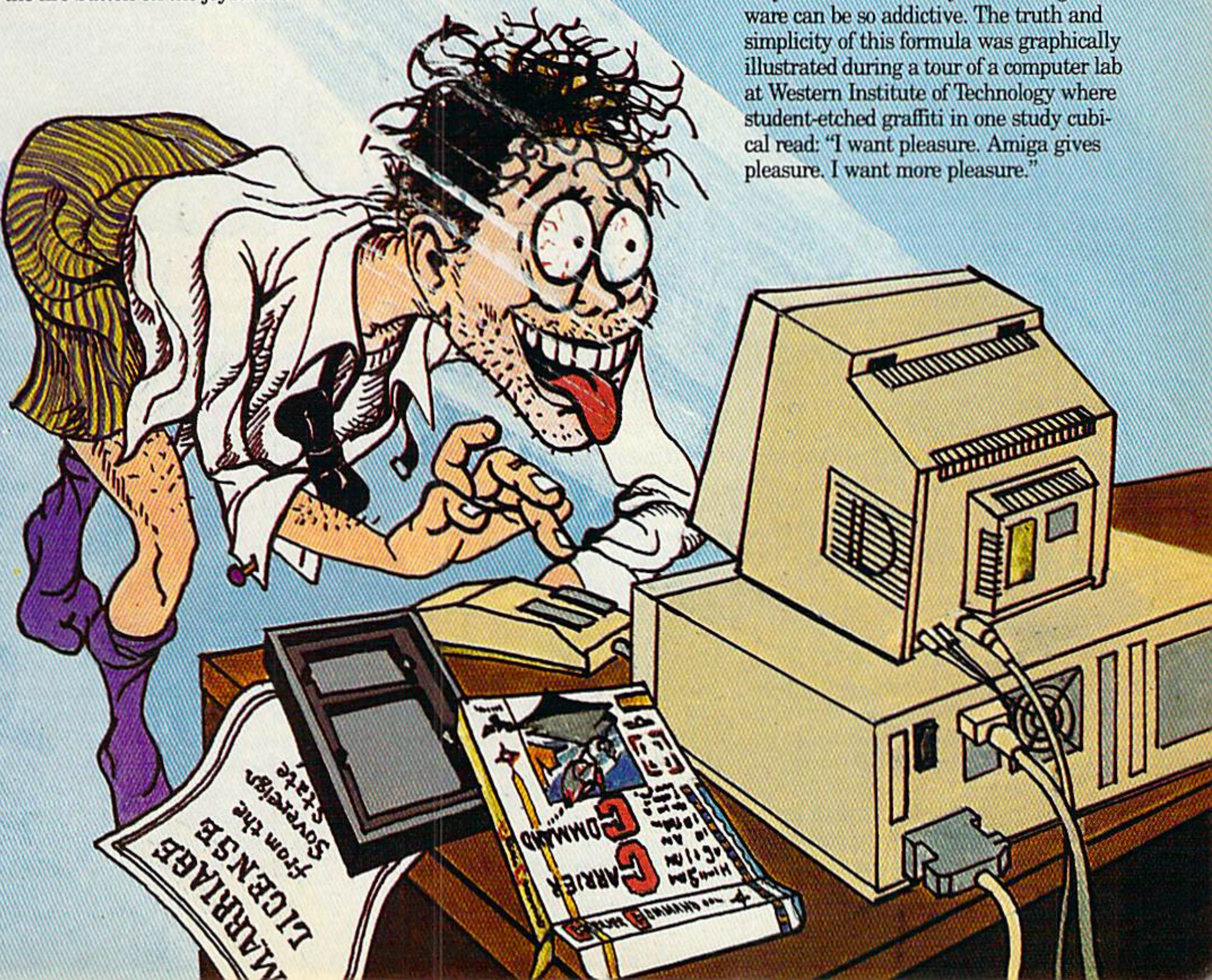
It is not uncommon for AA victims to be observed gazing happily into space during opera performances, English classes or year-end budget meetings. This tell-tale sign is often accompanied by a mild smile and a twitch of the person's firing finger. In advanced cases they may also be heard lowly humming the theme music to *Obliterator* or *F/A-18 Interceptor.*

9. Chasing the UPS truck

In severe cases of AA, users have been known to physically chase United Parcel Service vans and mail carriers. This unusual behavior is apparently triggered by the association such carriers have with the delivery of software packages. In an effort to acquire the new games fast, users often order from mail order houses who deliver via UPS, U.S. mail, or similar services. Thus the addicted user is conditioned to associate those carriers with the substance they crave. And when the carrier fails to deliver, the user may involuntarily chase delivery trucks with the misdirected notion that once caught, he might find a game.

10. Feelings of Euphoria

While not an emotion restricted only to Amiga Addicts, euphoria and Amiga Addiction seem to go hand in hand. In an exhaustive three-year study, I was unable to find a single addict who did not identify euphoria as the emotion he or she experienced while using the Amiga. Recognizing that the acquisition of pleasure is one of the basic drives all humans share, it is easy to understand why some Amiga software can be so addictive. The truth and simplicity of this formula was graphically illustrated during a tour of a computer lab at Western Institute of Technology where student-etched graffiti in one study cubical read: "I want pleasure. Amiga gives pleasure. I want more pleasure."



DANIEL STAPLEFORD

The Cure

If someone you know shows three or more of the above symptoms, it is fair to say he or she is well on the road to Amiga Addiction.

Is there a cure? To date there is no known cure for Amiga Addiction (nor, in truth, has anyone desired one). In fact, the trauma of withdrawal can be so severe and emotionally draining that three out of four doctors we surveyed discouraged their patients from even attempting software abstinence.

Rather than avoiding software, these doctors prescribed control. They instruct their patients to first identify their desires and then channel those emotions constructively. They help each of their AA patients find an affordable, reliable source which fulfills their cravings—which normally translates into a regimented program of healthy games. Above all, patients should resist the temptation to buy *every* game. Rather they should buy sensibly, building up a library of titles which includes the type of software they find satisfying, and those which supply the maximum amount of fun for the bucks. Affordable, quality software is all the medicine a person suffering from Amiga Addiction needs.

Controlling AA Without Breaking the Budget

The cost of trying to purchase multiple software titles can financially burden even the most well-heeled Amiga owner. Rather than trying to own every software title released for your Amiga, pick your titles sensibly. The first thing you must do is identify your preferences and stick to titles which fit those tastes. For instance, if you are a sports fan, chances are your money will be better invested in software simulating sporting events rather than text adventures. That's not to say you can't enjoy software in different categories (nor should you deprive yourself of the joy of occasionally sampling a variety of software), it's just that you'll probably be happier sticking with titles which reflect your identified interest.

I Am An Addict

Let me confess that if anyone belongs in Amigan's Anonymous (another AA), it is I. I can trace my addiction back to 1982 when I started on the mild stuff known generically as PD (public domain) on my first Commodore 64. As the years have passed, I have steadily tried and gotten hooked on the hard stuff. Even today I occasionally will try a small dose of PD, but I'm primarily hooked on the hard-core, cash-and-carry, commercial titles.



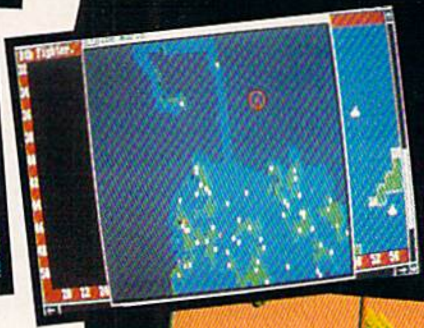
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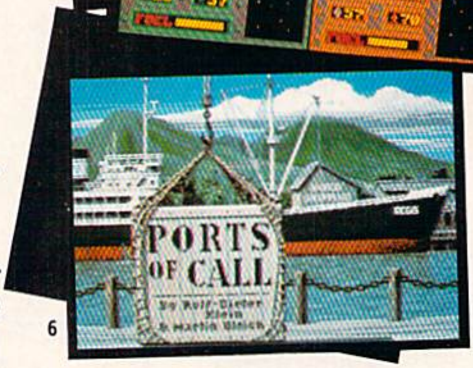
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Anyone who has attempted to try all the hundreds of titles released every year will attest to the enormous drain such an addiction can have on the family budget (which in turn can strain bank accounts, marital ties, etc). But like any pleasure, software highs can be brief. The highly touted, "ultimate" software you thought would provide you with hours of Amiga kicks turned out to be high on cost but low on entertainment. Believe me, I've been there too.

> True to each game's addictive nature, those few moments I plan to spend with it often stretch into hours or even days as the fun of the game possesses me.

Not many, but some of the software packages I've tried over the years have proven staying power. They are the ones I keep on the shelf and turn to whenever I have a few minutes free to do as I please. And true to each game's addictive nature, those few moments I plan to spend often stretch into hours or even days as the fun of the game possesses me. In all I've identified 31 software titles which I've found truly addictive. These are my favorites, the ones I play over and over. These are the games which have caused me to lose sleep, weight and occasionally miss a deadline.

These are the ones I *know* are worth owning. Why 31, instead of something more traditional like an even dozen or two, or maybe the top 40? The answer is simple—I'm not addicted to just a dozen or 24 or 32 games. While I've enjoyed hundreds of games, my total identified list of Amiga Addictions stands at exactly 31 flavors.

Like any addiction, what gives me a thrill may leave you cold. Nonetheless, I want to share my personal list of favorite Amiga software. I consider each a true winner, deserving of the official AA warning label:

"This game has been determined by the Software General to be habit forming. Parents, teachers and business owners should take steps to keep these programs out of the hands of persons required to meet deadlines, operate a business, prepare homework or study for final exams. Each program has been certified FUN by an independent study of members of AA (Amiga Addicts). For recreational use only."

One Amiga Addict's Fix List

Arkanoid: Because arcade games are not my favorite kind of games, I can't explain why I'm attracted to this one other than that it's mentally addicting. I intended to try it once just to see what all the hoopla was about, and before I recovered I had shot the entire afternoon. I admit the object of the game is senseless—you try to punch out rows of colored bricks by hitting them with a ball bounced off an electric paddle. That doesn't sound overly challenging or even fun, but it is both.

Maybe it is the perfectly pitched sound effects that attract me to the game, or maybe it is the fast action, or maybe it is the dilemma of trying to catch a falling capsule while still keeping the speeding ball in play, or maybe it is the 66 levels of play. I can't explain *Arkanoid*'s appeal, but it has plenty.

Battle Chess: This is a chess simulator for both true chess enthusiast and novice alike. Recognizing that there were already enough good Amiga chess games, Interplay decided to add an entertaining twist to the centuries-old challenge. The rules and results of moves are unchanged here (in fact, if you wish you can turn all the special features off and run this as a plain vanilla chess game) but in order to put a lot of fun into what can be a dry strategy game, this one is fully animated.

I guarantee that even people who turn their noses up at the mention of chess will be glued to the screen while this one is in action. When a piece takes an opposing piece, the two square off to do battle. Each conflict is fully animated and often humorous, even though the defending piece always loses (as the rules dictate). I never knew chess could be so much fun.

Better Dead Than Alien: I wish I could describe this game without comparing it to the 1977 arcade hit *Space Invaders,* but I can't. The premise in both games is the same: you must defend your planet while wave after wave of invading aliens dive at you. But the comparison stops there. The first game represents the arcade genre in its infancy, and *B.D.T.A.* is arcade as only the Amiga can display it.

But why is this game addictive? First it is fun, a little silly, full of surprises, and either one or two players can compete simultaneously—not against each other but as partners. And the invading aliens are a delight to witness; this one has some of the strangest adversaries you'll ever face in any computer game.

Breach: This is a squadron-level strategy game which requires you to create a leader and command an offensive squad through multiple scenarios ranging from rather simple battles to really demanding invasions. In all the conflicts you are pitted against both aliens and powerful mystical creatures. Although the game's pieces are moved much like those you would find on a board game, I found it well designed and easy to use. What I have yet to master is how to keep my squad leader (and his troops) alive long enough to progress to the really tough levels. But what makes the game worth the asking price is that it comes with a scenario-building utility which lets you design and fight unique scenarios.

Captain Blood: Don't be put off by this one's name, it is not a cross between *Rambo* and the *Texas Chainsaw Massacre*. Actually the game requires more communication and diplomacy skills than it does laser-beam firing. This combination space/detective/arcade game is wrapped around a beautifully-designed screen which lets you explore a massive computer-generated universe. Your job is to search the universe and destroy five clones which are endangering your existence. But what makes the game addictive is that to succeed you must find, interrogate (using a universal icon language) and occasionally assist aliens from dozens of different planets.

This game creates a complex, realistic, graphically-appealing universe which is a delight to visit if for no other reason than to see what life forms you can find.

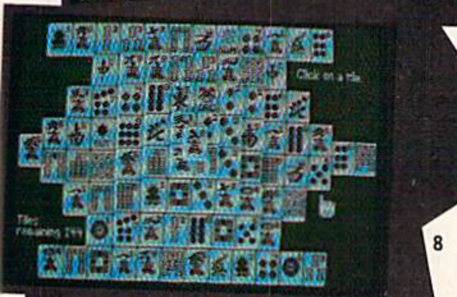
Carrier Command: This is without question the most amazing piece of computer gaming I have ever seen. Each time I boot it I get another rush just anticipating the action and options packed on this single disk. This game takes you beyond simply battling evil; it requires you to explore, conquer, develop and defend a massive empire spanning dozens of islands, and finally defeat a massed invading force.

Wait, I know that may sound a bit old hat, but you'll share my enthusiasm when you understand that all of this action is displayed with three-dimensional perfection, all at real-time speed. And if that were not enough, you are able to control both sea, air and land forces (all 3D) and toggle between views from each instantly. All that (including screens of radar, repairs, supplies, maps, etc.) without a single delay caused by disk access. If there were an academy award for programming excellence, the guys and gals at Rainbird Software would get it for this one.

Crystal Hammer: This game could be described as *Arkanoid*'s smaller twin (it is

Continued on page 86

7


8


9


10


11


1. Battle Chess 2. Better Dead Than Alien 3. Breach 4. Empire 5. Fire Power 6. Ports of Call 7. Questron II 8. Shanghai 9. Superstar Ice Hockey 10. Faery Tale Adventure 11. Virus

Continued from page 48

The four programs I tested were: *Quarterback*, Central Coast Software, $69.95; *Superback*, The Disc Company, $79.95; *Ultra DOS Utilities*, Free Spirit Software, $59.95; and *EZ Backup*, EZ Soft, $49.95.

EZ Backup

The first program I looked at was *EZ Backup*. I received version 3.0 for review. After having spent some time working with it I'm glad I never saw the first two versions. This program had an unfinished feel to it, from the hard-to-read revised manual to the batch file-driven set of programs run from the CLI that make up the package. This is a shame, as the underlying logic for the design of the program looked good.

I had trouble with the program from the beginning. The manual is vague and unclear in far too many areas. In fact, I was never able to satisfactorily create a backup, much less restore. EZ Soft is working on a new version of this program that supports the Workbench. Perhaps it may be worth waiting for, but for now I would not trust my hard disk to this program.

Superback

Next I tested *Superback*. What a welcome relief! The program is a single file, which can be run from the Workbench by clicking on an icon. The user interface is completely visual, well designed and intuitive. The main screen lists every logical and physical device currently available in the system and lets you select either backup or restore. It also offers a verify after write option. You may also select full or incremental backup, based on the archive bit.

Once you've set your options, you progress to the selection screen. It's here that you select the directories/files to be included in the backup. The interface is clever: two windows, one showing all directories and sub-directories with sub-directories indented to indicate their subordinate position, and the other showing all files in the currently-selected directory. A running total of the number of files, total bytes and number of required disks to create the backup is displayed at the bottom of the screen.

Superback automatically formats and names disks during the backup process. It uses a non-standard format to speed up the process and to pack more than the 880K that is standard for AmigaDOS disks onto the backup disks. *Superback* also beeps as it finishes writing to each disk.

Restoring is just as easy. You just select the device you wish to restore to, load in the first disk from your backup set and go. You can selectively restore by clicking on the directories/files you want to restore from the list displayed on screen. *Superback* keeps a complete catalog of backed-up files on the first disk in the set.

Superback used five disks to back up my test directory, and took eight minutes, thirty seconds with the verify after write option selected. To restore the set back on my hard disk took exactly six minutes. *Superback* sets the archive bit on all files it restores and will let you set an "ask before overwrite" option during restore.

Ultra DOS Utilities

The *Ultra DOS Utilities (UDU)* Module 1 is very similar in design to the various DIRUTIL programs that are available both as public domain and commercial programs. There is, however, an important difference. If you try to copy more than 880K onto a floppy with normal DIRUTIL programs you will run into problems. With UDU you will get a message to insert the next disk in the backup series.

After having used *UDU* I feel that it is better suited for use as a DIRUTIL type program than as a hard disk backup program. It does not support setting the archive bit, although it does support selecting files by their date/time stamp which could be used in a crude way to do the same thing. It has two major drawbacks—it is very slow and it gets confused easily. It took almost 38 minutes to back up my test directory, and I was unable to correctly restore the data to my recovery directory. It seems that UDU was unable to keep track of the correct directories to restore files to.

UDU also lacks some of the basic amenities like beeping when it has finished with a disk, validating disk writes, cataloging files for selective restores and listing the number of disks required for a backup. This is not the program I would choose to maintain my hard disk backups.

Quarterback

The fourth and final program I tested was *Quarterback Version 2.1*. In a sense this was a bit of a ringer, as *Quarterback* is the program I've chosen to keep my hard disk backed up. Version 2.1 however, was new to me, and I was eager to try out the improvements it included. Backup time on my test directory was six minutes, thirty seconds, with the restore time coming in at six minutes, twenty seconds, all with verify turned on. The backup required four disks.

Quarterback uses the standard two-window display to select directories and files. You can make selections based on date, archive bit or filename with wildcards. Unlike *Superback* you can constrain your selection parameters to affect only your current directory or all sub-directories below it. *Quarterback* also supports the use of two floppy drives during backup and restore; this makes the process much more convenient.

Quarterback also offers some very useful extras: it produces a backup report that can be sent to disk or printer, it restores file notes, you can set up and save a configuration file to define/limit the directories/files selected for backup, and it can be run via a batch file for power users. *Quarterback* also saves a copy of its file catalog on both the first and the last disk in the backup set. This insures that you will be able to use your data when you need it.

Both *Superback* and *Quarterback* disks can be copied using DISKCOPY to create a backup set of your backup. They also support backing up to other devices besides floppies.

Given the added power and lower price of *Quarterback*, it would be my first choice for a hard disk backup program. Remember, if you can afford a hard disk, you can afford a hard disk backup program.

Product Information

Quarterback $69.95
Central Coast Software
268 Bowie Drive
Los Osos, CA 93402
(805) 528-4906

Superback $79.95
The Disc Company
3135 S. State Street
Ann Arbor, MI 48108
(313) 665-5540

Ultra DOS Utilities $59.95
Free Spirit Software
P.O. Box 128
58 Noble Street
Kutztown, PA 19530
(215) 683-5609

EZ Backup $49.95
EZ Soft
21125 Chatsworth Street
Chatsworth, CA 91311
(818) 341-8681

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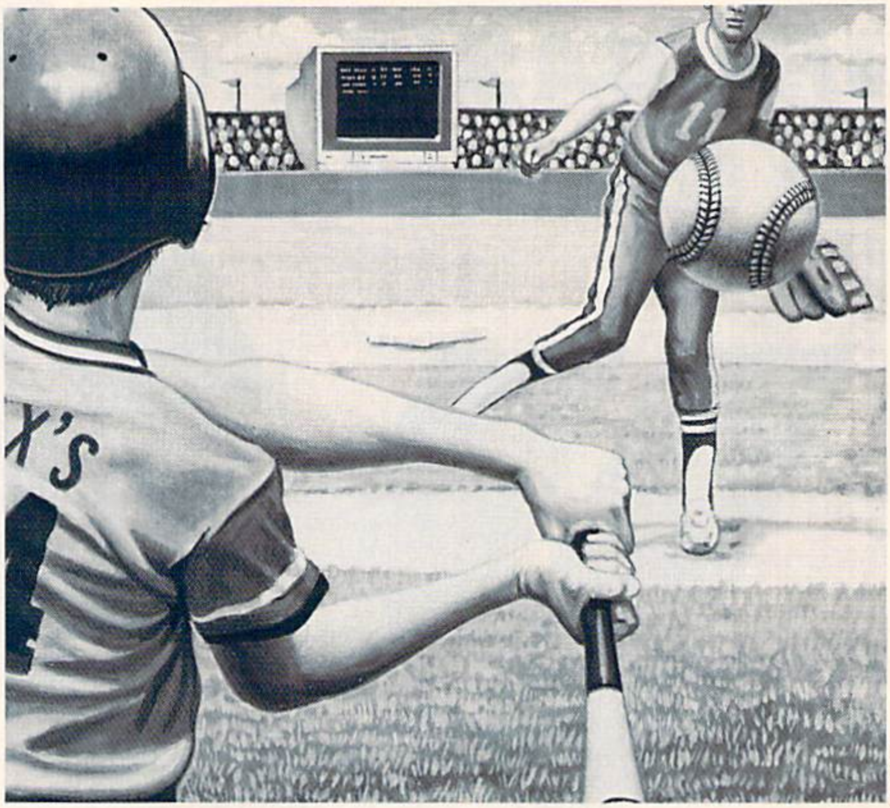
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(GF9200)

by Michael J. Reed

Baseball Stats Book

for the Commodore 128



ED SAUK

I've coached kids' baseball for years, and the most frequently asked question they have is "What's my batting average?" followed closely by "How many hits do I have?" A batting average gives them something tangible in common with Wade Boggs and Dale Murphy, and no matter how low their average may be, there's something about knowing they have one that means the world to them.

This program not only allows you to answer those questions for any ten-year-old in the league, but for any ten-year-old at heart in adult softball leagues. And it is just what you need at the end of the season to help pick All-Stars when each coach comes in with his own stats to show why Johnny on his team should be an all-star rather than Linda on yours—these stats are entered by the official scorer who (supposedly) scores without bias. Right or wrong, all are measured by the same set of standards.

My wife was the official scorer last year for our local Little League, and I was using another program to track statistics for my team only. I remembered how much trouble it had been to get together league stats at the end of the season before, and decided to use my new Commodore 128 to help. Baseball Stats Book evolved from a simple one-stat-at-a-time entry format to the 40- and 80-column switch it now boasts because of my frequent errors in entering correct numbers. The wife's occasional reminder, "That should have been two *hits,* not *runs,*" after I'd already hit the RETURN key also had something to do with it, though. But even after that modification, I still occasionally needed to change an error of omission or spelling of hard-to-read names. You can now easily handle any of these contingencies.

Baseball Stats Book requires a Commodore 128 and a monitor which can switch between 40 and 80 columns when it prompts you. It begins in the 80-column mode, checks to see if you already have a league file on disk, and prints the current league standings and a menu. When you run it for the first time, you will enter player names and numbers for each team, along with the team name and uniform color. I've left our league colors in the program (lines 1380–1500), but the list is easy to change or expand.

After entering all this information, you will get a standings screen with the menu. Press "A" to go to the portion of the program that allows you to enter stats from games. We did it once each week, which meant six games in a sitting. You decide how many you want to try to put in and tell the computer when it asks. It will then ask for the game match-up, and you enter the team numbers from the standings.

The program figures out which teams you're talking about, asks how many runs each team scored, then sends you to the 40-column screen. There it prints the players' names with zeros in each column of statistics. You simply use the cursor keys to move the cursor to the ones which need to be changed from zero to something else, hit HOME when complete to put the cursor back on the question mark. Look them over one more time to be sure they're right, and hit RETURN. Those numbers will be read off the screen and added to the individual and team totals, and then the other team's screen will come up and you repeat the procedure.

When you hit RETURN for the second team, the same storage will take place, and you'll get a prompt to return to the 80-column screen. This procedure goes on until you've entered all the games you said you wanted. Just in case you're like me and forget to do things, the program then stores all these changes to disk and returns you to the menu with new standings reflecting the games you just entered.

Now the EDIT routine comes in handy. No matter how hard you try, you will end up correcting a name or number sooner or later. After you pass out the stats to all the teams, some young Reggie Jackson will come up to you and say, "Hey, I only have two strikeouts, not three." Sure enough, you'll go back and check the games and find out he was right. Don't forget to use "Store" after making your changes.

The print routine allows you to get a hard copy of the league standings or individual team statistics. I ran these off last year and handed them out to each coach to show his or her kids. There is no provision for viewing these on the screen, but it could easily be done by using Mark Jordan's "ScreenSave" program from the February 1988 issue of *Commodore Magazine* to save the menu and standings to screen. Then, define a window and use the hardcopy print routine as a subroutine to print to the window rather than the printer. This is all in lines 670–900.

Press "R" from the menu to sort and print averages, in order, for the entire

league. You decide if you want to print out the Top 10, Top 20 or Top 132, and the program sorts them all out and prints the players' names, teams and batting averages from #1 down.

Baseball is for kids, and kids at heart. No matter what age group you deal with, Baseball Stats Book adds a little life to the tedious job of tracking a league's statistics. It also gives you the pleasure of seeing the gleam in the eye of that youngster when you tell him that his batting average is better than Dave Winfield's—just think of it! ■

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Baseball Stats Book

```
10 FAST:COLOR 5,1:COLOR 6,1
   :SP$="[SPACE15]":PRINT"[CLEAR]
   "CHR$(27);"R";CHR$(14)'HYYK
20 FOR I=0 TO 18 STEP 2:J=I/2
   :COLOR 5,(J+3):WINDOW I,J,59+I,
   14+J,1:READ A$:A$="[SPACE2,SHFT T]
   EAM [SHFT S]TATS - "+A$:PRINT A$
   :NEXT'QSOW
30 COLOR 5,13:WINDOW 20,10,79,24,
   1'CTTE
40 COLOR 5,2:PRINT"[DOWN3]"SPC(18)"
   [RVS,SPACE23]":PRINT SPC(18)"[RVS,
   SPACE2,SHFT B,SHFT A,SHFT S,SHFT E,
   SHFT B,SHFT A,SHFT L2] [SHFT S,
   SHFT T,SHFT A,SHFT T,SHFT S]
   [SHFT B,SHFT O2,SHFT K,SPACE2,
   RVOFF]"   :PRINT SPC(18)"[RVS,
   SPACE23]"'HPBD
50 COLOR 5,16:PRINT SPC(18)"[RVS,
   SPACE2]FOR UP TO 10 TEAMS[SPACE3]"
   :PRINT SPC(18)"[RVS,SPACE5]
   OF 15 PLAYERS[SPACE5]"
   :PRINT SPC(18)"[RVS,SPACE23]"'HQUV
60 COLOR 5,3:PRINT SPC(18)"[RVS,
   SPACE2]BY ";:COLOR 5,7
   :PRINT"[RVS] [SHFT M]ICHAEL
   [SHFT J]. [SHFT R]EED[SPACE2]"
   :SLEEP 3'GQFQ
70 DATA "[SHFT C]ARDINALS","[SHFT Y]
   ANKEES","[SHFT B]RAVES","[SHFT A]
   'S","[SHFT R]OYALS","[SHFT M]ETS",
   "[SHFT A]STROS","[SHFT O]RIOLES","
   [SHFT P]ADRES","[SHFT P]
   IRATES"'BJCD
80 DIM PL$(8,15),AB(8,15),H(8,15),
   DB(8,15),TB(8,15),HR(8,15)'BDSP
90 DIM RS(8,15),SO(8,15),BB(8,15),
   AV(8,15),RB(8,15),AL(150),AL$(150),
   T$(150)'BTLT
100 DOPEN#1,"LEAGUE":IF DS>0 THEN
    DCLEAR:GOTO 1360'GOYD
110 INPUT#1,NT:FOR I=1 TO NT:TN(I)=I
    :INPUT#1,TM$(I):INPUT#1,TC(I)
    :INPUT#1,TS$(I):INPUT#1,W(I)
    :INPUT#1,L(I):INPUT#1,PCT(I)
    :INPUT#1,GB(I):INPUT#1,TH(I)'NGIV
120 INPUT#1,TR(I):INPUT#1,TA(I)
    :INPUT#1,T(I):NEXT I'EYUE
130 INPUT#1,D1$:DCLOSE#1:K=1
    :D2$=D1$'ETFE
140 COLOR 5,1:PRINT"[HOME2,RVS,CLEAR]"
    :COLOR 5,4:S$=" [SHFT S]
    TANDINGS AS OF "+D1$'FOJL
150 PRINT"[UP,RVS]";S$:COLOR 5,2
    :WINDOW 1,1,40,2,1:X=0
    :GOSUB 1170'FCJJ
160 FOR I=1 TO NT:DOPEN#8,(TM$(I))
    :INPUT#8,NP(I)'FAAJ
170 FOR J=1 TO NP(I):INPUT#8,PL$(I,J)
    :INPUT#8,AB(I,J):INPUT#8,H(I,
    J)'GMUN
180 INPUT#8,DB(I,J):INPUT#8,TB(I,J)
    :INPUT#8,HR(I,J):INPUT#8,RS(I,
    J)'EOHN
190 INPUT#8,SO(I,J):INPUT#8,BB(I,J)
    :INPUT#8,AV(I,J):INPUT#8,RB(I,
    J)'EOWO
200 NEXT J:DCLOSE#8:NEXT I'DHOY
210 COLOR 5,1:WINDOW 41,0,79,23,1
    :COLOR 5,2:WINDOW 51,3,69,14,1
    :COLOR 5,4:WINDOW 53,4,67,13,1
    :PRINT"[DOWN,RIGHT,SHFT W]HICH
    [SHFT O]PTION?[DOWN]"'HELS
220 PRINT"[RIGHT4,RVS,SHFT E,RVOFF]
    DIT":PRINT"[RIGHT4,RVS,SHFT A,
    RVOFF]DD [SHFT G]AMES"
    :PRINT"[RIGHT4,RVS,SHFT P,RVOFF]
    RINT":PRINT"[RIGHT4,RVS,SHFT S,
    RVOFF]TORE":PRINT"[RIGHT4,RVS,
    SHFT R,RVOFF]ANK AVG"
    :PRINT"[RIGHT4,RVS,SHFT Q,RVOFF]
    UIT"'GFQW
230 GET KEY A$:IF(A$="[SHFT E]
    ")OR(A$="E")THEN 1640'HPSH
240 IF(A$="[SHFT A]")OR(A$="A")THEN
    300'FLWG
250 IF(A$="[SHFT P]")OR(A$="P")THEN
    670'FLMH
260 IF(A$="[SHFT S]")OR(A$="S")THEN
    560'FLQI
270 IF(A$="[SHFT R]")OR(A$="R")THEN
    1920'FMNJ
280 IF(A$="[SHFT Q]")OR(A$="Q")THEN
    COLOR 5,1:WINDOW 43,0,79,23,1
    :COLOR 5,6:WINDOW 45,10,55,13,1
    :END'KURV
290 GOTO 230'BDEG
300 COLOR 5,11:WINDOW 45,9,75,11,1
    :INPUT"[SHFT H]OW MANY GAMES TO
    ENTER";NG:IF NG=0 THEN 210'GEWO
310 INPUT"[SHFT T]ODAY'S [SHFT D]ATE";
    D2$'BEHD
320 WINDOW 45,10,75,12,1
    :PRINT"[SHFT E]NTER MATCH-UPS
    WITH TEAM":PRINT"NUMBERS
    SEPARATED BY A COMMA"'DQET
330 FOR Q=1 TO NG:COLOR 5,4
    :WINDOW 45,12,75,12,1
    :INPUT X(Q),Y(Q)'GIGL
340 COLOR 5,5:WINDOW 45,16,75,18,1
    :PRINT TM$(X(Q))" VS "TM$(Y(Q))
```

```
    :COLOR 5,4:WINDOW 45,17,75,19,
    1'FGUR
350 PRINT TM$(X(Q));:INPUT S1
    :PRINT TM$(Y(Q));:INPUT S2'ECMK
360 IF S1>S2 THEN W(X(Q))=W(X(Q))+1
    :L(Y(Q))=L(Y(Q))+1'HKEP
370 IF S2>S1 THEN W(Y(Q))=W(Y(Q))+1
    :L(X(Q))=L(X(Q))+1'HKEQ
380 SLOW:WINDOW 47,21,73,22,1
    :PRINT"CHANGE TO 40-COLUMN
    SCREEN"'DROR
390 C=X(Q):I=0:COLOR 4,TC(C)
    :PRINT CHR$(27);"X":PRINT CHR$(14)
    :PRINT"[CLEAR,DOWN,RIGHT3]
    "TM$(X(Q))" VS "TM$(Y(Q))
    :GOSUB 930'JARA
400 C=Y(Q):I=0:COLOR 4,TC(C)'DQBE
405 PRINT"[CLEAR,DOWN,RIGHT3]
    "TM$(Y(Q))" VS "TM$(X(Q))
    :GOSUB 930:WINDOW 1,23,38,24,1
    :PRINT"[SHFT R]ETURN TO 80-COLUMN
    SCREEN[HOME2]":SLEEP 1
    :PRINT CHR$(27);"X"'HVSC
410 COLOR 5,1:WINDOW 41,15,79,23,1
    :NEXT Q'DUNF
420 FAST:FOR I=1 TO NT:IF W(I)+L(I)=0
    THEN PCT(I)=1:GOTO 440'KCVM
430 PCT(I)=W(I)/(W(I)+L(I))'DUMH
440 NEXT I'BBCC
450 FOR I=1 TO NT-1:FOR J=I+1 TO
    NT'ILOK
460 IF PCT(I)>PCT(J)THEN 490'DPFJ
470 H=PCT(I):PCT(I)=PCT(J)
    :PCT(J)=H'DDGO
480 H=TN(I):TN(I)=TN(J):TN(J)=H'DYMO
490 NEXT J:NEXT I:GB(TN(1))=0'DOJL
500 FOR D=2 TO NT:H=(TN(1)):G=(TN(D))
    :GB(G)=(W(H)-W(G)+L(G)-L(H))
    /2'KWFQ
510 IF GB(G)<.5 THEN GB(G)=0'ENHF
520 IF(GB(G)=INT(GB(G)))THEN
    M(I)=0'FTTI
530 IF(GB(G)<>INT(GB(G)))THEN
    M(I)=1'GTXJ
540 NEXT D:COLOR 5,1:PRINT"[HOME2,RVS,
    CLEAR]":COLOR 5,4:S$=" [SHFT S]
    TANDINGS AS OF "+D2$
    :PRINT"[UP,RVS]"S$'HTRS
550 COLOR 5,2:WINDOW 1,1,40,2,1:X=0
    :K=0:GOSUB 1170'FBQN
560 COLOR 5,1:WINDOW 41,0,79,23,1'CRWK
570 DOPEN#1,"@LEAGUE",W:PRINT#1,NT
    :COLOR 5,2:WINDOW 47,10,66,11
    :PRINT"[RVS,SHFT S]TORING [SHFT S]
    TANDINGS"'FEBX
580 FOR I=1 TO NT:P=TN(I)
    :PRINT#1,TM$(P):PRINT#1,TC(P)
    :PRINT#1,TS$(P)'HMCU
590 PRINT#1,W(P):PRINT#1,L(P)
    :PRINT#1,PCT(I):PRINT#1,GB(P)
    :PRINT#1,TH(P):PRINT#1,TR(P)
    :PRINT#1,TA(P):PRINT#1,T(P)'ILYB
600 NEXT I:PRINT#1,D2$:DCLOSE#1'DLVE
610 COLOR 5,1:WINDOW 42,1,79,24,1
    :COLOR 5,4:PRINT"[RVS,SHFT S]
    TORING [SHFT T]EAM [SHFT S]
    TATISTICS"'EWYQ
620 FOR I=1 TO NT:SCRATCH(TM$(TN(I)))
    :DOPEN#8,(TM$(TN(I))),W:E=TN(I)
    :PRINT#8,NP(E)'HBNS
630 FOR J=1 TO NP(E):PRINT#8,PL$(E,J)
    :PRINT#8,AB(E,J):PRINT#8,H(E,
    J)'GMOO
640 PRINT#8,DB(E,J):PRINT#8,TB(E,J)
    :PRINT#8,HR(E,J):PRINT#8,RS(E,
    J)'EOPP
650 PRINT#8,SO(E,J):PRINT#8,BB(E,J)
    :PRINT#8,AV(E,J):PRINT#8,RB(E,
    J)'EOFQ
660 NEXT J:DCLOSE#8:PRINT
    :PRINT"[RVS,SHFT @]":NEXT I
    :SLEEP 2:GOTO 210'HQBO
670 COLOR 5,5:WINDOW 45,10,74,12,
    1'CSVM
680 PRINT" [SHFT D]O YOU WANT A
    PRINTOUT OF":INPUT"[SHFT L]
    EAGUE STANDINGS";B$'CEBW
690 IF B$="N"THEN 720'DFYM
700 OPEN 4,4,7:PRINT#4:PRINT#4,
    CHR$(14);"[SHFT L]EAGUE [SHFT S]
    TANDINGS - ";D2$:PRINT#4,Z$
    :PRINT#4'GBMQ
710 FOR I=1 TO NT:PRINT#4,TS$(TN(I))
    :NEXT I:PRINT#4,CHR$(15)
    :CLOSE 4'IDNN
720 INPUT"[UP,SHFT I]NDIVIDUAL
    STATISTICS (Y/N)";B$
    :IF B$="N"THEN 210'EJSQ
730 INPUT"[SHFT W]HICH TEAM (ENTER
    NUMBER)";T'BCJM
740 OPEN 4,4,7:PRINT#4:PRINT#4,
    CHR$(14);TM$(TN(T));
    " PLAYER STATS AS OF ";D2$
    :PRINT#4,CHR$(15):A=TN(T)'HTYY
750 PRINT#4,"[SHFT P,SHFT L,SHFT A,
    SHFT Y,SHFT E,SHFT R,SHFT SPACE4,
    SPACE7,SHFT A,SHFT B,SHFT SPACE2]
     [SHFT H] [SHFT SPACE2,SHFT R,
    SHFT SPACE] 2[SHFT B,SPACE2]3
    [SHFT B,SHFT SPACE] [SHFT H,
    SHFT R,SHFT SPACE] [SHFT B2,
    SHFT SPACE] [SHFT S,SHFT O,
    SHFT SPACE] [SHFT R,SHFT B,SHFT I,
    SPACE3,SHFT A,SHFT V,SHFT G,
    SPACE2,SHFT SPACE]"
    :PRINT#4,"[CMDR T60]"'CFLC
760 FOR Z=1 TO 9:TT(Z)=0:NEXT Z
    :FOR I=1 TO NP(A):LN$=PL$(A,
    I)+RIGHT$(SP$,(15-LEN(PL$(A,
    I))))'NCNC
770 TT(1)=TT(1)+AB(A,I)'CRHN
780 TT(2)=TT(2)+H(A,I)'CQBO
790 TT(3)=TT(3)+RS(A,I)'CRUP
800 TT(4)=TT(4)+DB(A,I)'CRQH
810 TT(5)=TT(5)+TB(A,I)'CRJI
820 TT(6)=TT(6)+HR(A,I)'CRPJ
830 TT(7)=TT(7)+BB(A,I)'CRUK
```

```
840  TT(8)=TT(8)+SO(A,I)'CRCL
850  TT(9)=TT(9)+RB(A,I)'CRPM
860  PRINT#4,LN$;:PRINT#4,USING"####";
     AB(A,I),H(A,I),RS(A,I),DB(A,I),
     TB(A,I),HR(A,I),BB(A,I),SO(A,I),
     RB(A,I);:PRINT#4,USING"[SPACE3]
     .###";AV(A,I)'FRNI
870  NEXT I:LN$="TOTALS[SPACE9]"'CFNO
880  G=INT((TT(2)/TT(1))*1000)
     :G$="[SPACE3]."+STR$(G)
     :IF G<100 THEN G$="[SPACE3]
     .0"+STR$(G)'NKHC
890  G=TT(2)/TT(1):PRINT#4,"[CMDR T60]
     "'DOGE
900  PRINT#4,LN$;:PRINT#4,USING"####";
     TT(1),TT(2),TT(3),TT(4),TT(5),
     TT(6),TT(7),TT(8),TT(9);
     :PRINT#4,USING"[SPACE3].###";G
     :PRINT#4:PRINT#4:CLOSE 4
     :GOTO 210'JEJD
910  WINDOW 45,10,79,11,1
     :INPUT"[SHFT A]NOTHER TEAM";B$
     :IF B$="Y"THEN 730'FYEQ
920  COLOR 5,1:WINDOW 41,0,79,23,1
     :COLOR 5,4:GOTO 210'EAIN
930  REM *** CHANGE TO 40-COLUMN
     SCREEN ***'BERN
940  COLOR 5,1:PRINT" #[SPACE2,SHFT P,
     SHFT L,SHFT A,SHFT Y,SHFT E,
     SHFT R,SPACE3,SHFT A,SHFT B,
     SPACE2,SHFT R,SPACE2,SHFT H] 2
     [SHFT B] 3[SHFT B] [SHFT H,SHFT R]
      [SHFT B2] [SHFT S,SHFT O]
     [SHFT R,SHFT B,SHFT I]"'CESD
950  PRINT"[UP,DOWN]":COLOR 5,6
     :FOR V=1 TO NP(C):PRINT PL$(C,V)
     :NEXT'HWJS
960  FOR W=1198 TO(1198+40*(NP(C)-1))
     STEP 40:FOR Z=W TO(W+24)STEP
     3'MHKX
970  POKE Z,48:POKE(Z+54272),0:NEXT
     :NEXT:COLOR 5,4'GVKS
980  WINDOW 5,21,34,24,1:T(C)=0:TA(C)=0
     :TR(C)=0:TH(C)=0'FPWX
990  PRINT"[SHFT C]HANGE STATS
     W/CURSOR, THEN ":INPUT"[SHFT R,
     SHFT E,SHFT T,SHFT U,SHFT R,
     SHFT N] ON '?' TO SAVE. [HOME2]";
     A$'CEEF
1000 I=0:FOR W=1198 TO(1198+40*(NP(C)
     -1))STEP 40:I=I+1'KFJG
1010 AB(C,I)=AB(C,I)+PEEK(W)-48'ETTA
1020 RS(C,I)=RS(C,I)+PEEK(W+3)-48'FUWD
1030 H(C,I)=H(C,I)+PEEK(W+6)-48'FSTD
1040 DB(C,I)=DB(C,I)+PEEK(W+9)-48'FUVE
1050 TB(C,I)=TB(C,I)+PEEK(W+12)
     -48'FVOG
1060 HR(C,I)=HR(C,I)+PEEK(W+15)
     -48'FVAH
1070 BB(C,I)=BB(C,I)+PEEK(W+18)
     -48'FVKI
1080 SO(C,I)=SO(C,I)+PEEK(W+21)
     -48'FVNJ
1090 RB(C,I)=RB(C,I)+PEEK(W+24)
     -48'FVNK
1100 IF AB(C,I)=0 THEN GOTO 1120'EMLX
1110 AV(C,I)=INT(H(C,I)*1000/AB(C,
     I))/1000'FFNE
1120 TH(C)=TH(C)+H(C,I)
     :TR(C)=TR(C)+RS(C,I)
     :T(C)=T(C)+AB(C,I)'GAHL
1130 NEXT:TA(C)=INT(TH(C)*1000/T(C))
     /1000'GAKG
1140 COLOR 5,2:RETURN'CEPA
1150 COLOR 5,1:WINDOW 43,11,70,14,1
     :COLOR 5,2:RETURN'EXNG
1160 REM*****STANDINGS
     SUBROUTINE*******'BGPI
1170 Z$="[DOWN,SPACE3,SHFT T]EAM
     [SPACE5,SHFT W,SPACE2,SHFT L,
     SPACE3,SHFT P]CT[SPACE3,SHFT H,
     SPACE3,SHFT R,SPACE2,SHFT A]VG
     [SPACE2,SHFT G,SHFT B] ":PRINT Z$
     :X=0'DIVR
1180 FOR Y=4 TO 22 STEP 2:X=X+1
     :T=TN(X):COLOR 5,TC(T)'IYXN
1190 W$=STR$(W(T)):IF W(T)<10 THEN
     W$=" "+W$'HTSM
1200 L$=STR$(L(T)):IF L(T)<10 THEN
     L$=" "+L$'HTTD
1210 PCT$="[SPACE2]."+RIGHT$(STR$(INT
     (1000*PCT(X))),3):IF PCT(X)=0
     THEN PCT$="[SPACE2].000"'KJEM
1220 IF L(T)=0 THEN PCT$=" 1.000"'EJNC
1230 GB$=STR$(GB(T)):IF GB(T)=0 THEN
     GB$="[SPACE2]- "'GULH
1240 IF M(T)=0 THEN GB$="[SPACE2]
     "+GB$'FLBE
1250 GB$=" "+RIGHT$(GB$,3)'DKDE
1260 H$=STR$(TH(T)):IF TH(T)<100 THEN
     H$=" "+H$:IF TH(T)<10 THEN H$="
     "+H$'MJFQ
1270 R$=STR$(TR(T)):IF TR(T)<100 THEN
     R$=" "+R$:IF TR(T)<10 THEN R$="
     "+R$'MJES
1280 IF T(T)=0 THEN TA(T)=0
     :AVG$=" .000":GOTO 1310'GVDM
1290 TA(T)=INT(1000*TH(T)/T(T))/1000
     :AVG$=" ."+RIGHT$(STR$(1000*TA(T)
     ),3)'KTHU
1300 IF TA(T)<.1 THEN AVG$="
     .0"+RIGHT$(AVG$,2)'GTNE
1310 TS$(T)=TM$(T)+LEFT$(SP$,
     (10-LEN(TM$(T))))+W$+L$+PCT$+H$+
     R$+AVG$+GB$'MYXQ
1320 WINDOW 1,(Y-2),40,Y,1:PRINT X
     :PRINT TS$(T):IF NT=X THEN
     1340'HGMJ
1330 NEXT Y'BBSY
1340 COLOR 5,1:WINDOW 1,Y,40,Y,1:K=0
     :COLOR 5,4:RETURN'FXPI
1350 REM BUILD NEW LEAGUE FILE'BSMG
1360 COLOR 5,7:WINDOW 20,7,59,14,1
     :COLOR 5,2:WINDOW 21,8,58,13,1
     :COLOR 5,3:WINDOW 22,9,57,12,1
     :K=1'HGTT
1370 COLOR 5,4:WINDOW 23,10,56,11,1
```

```
     :PRINT"[SHFT H]OW MANY TEAMS IN
     THE LEAGUE":INPUT NT'EWQS
1380 COLOR 5,2:WINDOW 1,1,10,10,1
     :PRINT"[DOWN]1=[SHFT R]ED"
     :PRINT"2=[SHFT M]AROON"
     :PRINT"3=[SHFT B]LUE"'FTKS
1390 PRINT"4=[SHFT Y]ELLOW"
     :PRINT"5=[SHFT O]RANGE"
     :PRINT"6=[SHFT G]RAY"
     :PRINT"7=[SHFT L]T [SHFT B]LUE"
     :PRINT"8=[SHFT W]HITE"'FEYW
1400 WINDOW 23,10,56,11,1
     :PRINT"[SPACE3,SHFT E]
     NTER TEAM NAME AND COLOR"
     :PRINT" SEPARATED BY A COMMA (AT
     PROMPT)[UP]":SLEEP 5
     :PRINT"[CLEAR]"'FUFV
1410 FOR I=1 TO NT:PRINT"[SHFT T]
     EAM #";I;"[SPACE2]([SHFT N]AME,
     [SHFT C]OLOR#)":INPUT TM$(I),
     TC(I):TS$(I)=TM$(I)
     +"*************"'HJFT
1420 ON TC(I)GOTO 1430,1440,1450,1460,
     1470,1480,1490,1500'CTJI
1430 TC(I)=3:GOTO 1510'CLJD
1440 TC(I)=5:GOTO 1510'CLLE
1450 TC(I)=7:GOTO 1510'CLNF
1460 TC(I)=8:GOTO 1510'CLOG
1470 TC(I)=10:GOTO 1510'CMFH
1480 TC(I)=13:GOTO 1510'CMII
1490 TC(I)=15:GOTO 1510'CMKJ
1500 TC(I)=16'BHXA
1510 NEXT'BAEY
1520 PRINT"[DOWN2,SHFT W]
     HAT IS TODAY'S DATE"
     :INPUT D1$'CELH
1530 DOPEN#1,"LEAGUE",W:PRINT#1,NT
     :FOR I=1 TO NT:PRINT#1,TM$(I)
     :PRINT#1,TC(I):PRINT#1,TS$(I):D=0
     :FOR Q=1 TO 8:PRINT#1,D:NEXT Q
     :NEXT I'PHVY
1540 PRINT#1,D1$:DCLOSE#1'CJPF
1550 FOR X=1 TO NT:COLOR 5,TC(X)
     :WINDOW 23,10,56,11,1'FCMM
1560 PRINT TM$(X):INPUT" [SHFT H]
     OW MANY PLAYERS";NP(X)
     :DOPEN#8,(TM$(X)),W
     :PRINT#8,NP(X)'ELEU
1570 WINDOW 22,9,57,12,1
     :PRINT"[SPACE3]"TM$(X)
     :WINDOW 23,10,56,11,1'DKDO
1580 FOR J=1 TO NP(X):INPUT"[SHFT N]
     AME:";PL$(X,J):INPUT"[SHFT N]
     UMBER:";A:PRINT'GVIS
1590 A$=STR$(A):IF A<10 THEN
     A$="0"+RIGHT$(A$,1)'IRBP
1600 PL$(X,J)=A$+"-"+PL$(X,J)
     :PRINT#8,PL$(X,J)'EEHI
1610 A=0:FOR Z=1 TO 10:PRINT#8,A
     :NEXT Z'GNWG
1620 NEXT J:DCLOSE#8:NEXT X'DHEE
1630 DOPEN#1,"LEAGUE":GOTO 110'CICG
1640 COLOR 5,7:WINDOW 46,8,74,15,1
     :INPUT" [SHFT W]HICH TEAM
     [SHFT N]UMBER";I'DUHP
1650 COLOR 5,15:WINDOW 46,9,74,15,1
     :INPUT"[SHFT W]HICH PLAYER
     (UNIFORM #)";A$:IF VAL(A$)<10
     THEN A$="0"+RIGHT$(A$,1)'KMTA
1660 FOR J=1 TO NP(I):IF
     A$=LEFT$(PL$(I,J),
     2)THEN 1740'HBGP
1670 NEXT J:INPUT"[CLEAR,SHFT I]
     S THIS A NEW PLAYER";B$
     :IF B$="N"THEN 1650'FMIS
1680 NP(I)=NP(I)+1:INPUT"[SHFT P]
     LAYER'S NAME";P$:PL$(I,
     NP(I))=A$+"-"+P$'GHGW
1690 INPUT"[CLEAR,SHFT A]
     DD ANOTHER PLAYER TO THIS TEAM";
     A$:IF A$="N"THEN 1720'EKFW
1700 INPUT"[CLEAR,SHFT W]
     HAT UNIFORM # ";A$
     :IF VAL(A$)<10 THEN
     A$="0"+A$'HOJM
1710 GOTO 1680'BEMC
1720 WINDOW 47,9,73,15,1
     :INPUT"[SHFT A]DD TO ANOTHER
     TEAM";A$:IF A$="Y"THEN 1640'FYIQ
1730 GOTO 210'BDCE
1740 COLOR 5,7:WINDOW 46,8,74,15,1
     :PRINT PL$(I,J)'DBYL
1750 COLOR 5,15:WINDOW 48,9,72,14,
     1'CSIK
1760 PRINT"[SPACE4,RVS]1[RVOFF]=
     [SHFT A,SHFT B,SPACE4,RVS]6
     [RVOFF]=[SHFT H,SHFT R]"
     :PRINT"[SPACE4,RVS]2[RVOFF]=
     [SHFT H]ITS[SPACE2,RVS]7[RVOFF]=
     [SHFT S,SHFT O]"'CBNU
1765 PRINT"[SPACE4,RVS]3[RVOFF]=
     [SHFT R]UNS[SPACE2,RVS]8[RVOFF]=
     [SHFT W]ALKS":PRINT"[SPACE4,RVS]
     4[RVOFF]=2[SHFT B,SPACE4,RVS]9
     [RVOFF]=[SHFT R,SHFT B,SHFT I]"
     :PRINT"[SPACE4,RVS]5[RVOFF]=3
     [SHFT B,SPACE3,RVS]10[RVOFF]=
     [SHFT N]AME"'DCGH
1770 INPUT C:IF C>10 THEN PRINT"[UP2]"
     :GOTO 1770'GKPN
1780 ON C GOTO 1790,1800,1810,1820,
     1830,1840,1850,1860,1870,
     1880'CANS
1790 SCNCLR:PRINT"[SHFT C]URRENT
     [SHFT A,SHFT B]":PRINT AB(I,J)
     :PRINT"[SHFT C]ORRECT #"
     :INPUT AB(I,J):GOTO 1850'GXDA
1800 SCNCLR:PRINT"[SHFT C]URRENT
     [SHFT H]ITS":PRINT H(I,J)
     :PRINT"[SHFT C]ORRECT #"
     :INPUT H(I,J):GOTO 1890'GVYQ
1810 SCNCLR:PRINT"[SHFT C]URRENT
     [SHFT R]UNS":PRINT RS(I,J)
     :PRINT"[SHFT C]ORRECT #"
     :INPUT RS(I,J):GOTO 1890'GXUS
1820 SCNCLR:PRINT"[SHFT C]URRENT 2
     [SHFT B]":PRINT DB(I,J)
```

```
         :PRINT"[SHFT C]ORRECT #"
         :INPUT DB(I,J):GOTO 1890'GXAS
    1830 SCNCLR:PRINT"[SHFT C]URRENT 3
         [SHFT B]":PRINT TB(I,J)
         :PRINT"[SHFT C]ORRECT #"
         :INPUT TB(I,J):GOTO 1890'GXIT
    1840 SCNCLR:PRINT"[SHFT C]URRENT
         [SHFT H,SHFT R]":PRINT HR(I,J)
         :PRINT"[SHFT C]ORRECT #"
         :INPUT HR(I,J):GOTO 1890'GXAV
    1850 SCNCLR:PRINT"[SHFT C]URRENT
         [SHFT S,SHFT O]":PRINT SO(I,J)
         :PRINT"[SHFT C]ORRECT #"
         :INPUT SO(I,J):GOTO 1890'GXYW
    1860 SCNCLR:PRINT"[SHFT C]URRENT
         [SHFT W]ALKS":PRINT BB(I,J)
         :PRINT"[SHFT C]ORRECT #"
         :INPUT BB(I,J):GOTO 1890'GXNX
    1870 SCNCLR:PRINT"[SHFT C]URRENT
         [SHFT R,SHFT B,SHFT I]S"
         :PRINT RB(I,J):PRINT"[SHFT C]
         ORRECT #":INPUT RB(I,J)
         :GOTO 1890'GXMA
    1880 SCNCLR:PRINT"[SHFT C]URRENT
         [SHFT S]PELLING":PRINT PL$(I,J)
         :PRINT"[SHFT C]ORRECT # &
         [SHFT N]AME":INPUT PL$(I,J)'FUNC
    1890 SCNCLR:INPUT"[SHFT C]
         HANGE ANOTHER STAT";A$
         :IF A$="Y"THEN SCNCLR
         :GOTO 1760'HMVX
    1900 SCNCLR:INPUT"[SHFT A]
         NOTHER PLAYER";A$:IF A$="Y"THEN
         1640'FLVM
    1910 GOTO 210'BDCE
    1920 COLOR 5,6:WINDOW 49,12,71,13,1
         :PRINT"[SPACE3,SHFT S]ORTING
         [SHFT A]VERAGES":CO=0'EXIR
    1930 FOR I=1 TO NT:FOR J=1 TO NP(I)
         :CO=CO+1'ISLO
    1940 AL$(CO)=PL$(I,J):AL(CO)=AV(I,J)
         :T$(CO)=TM$(I):NEXT J:NEXT I'FVBT
    1950 COLOR 5,13:WINDOW 49,13,71,15,1
         :PRINT" [SHFT H]OW MANY [SHFT T]
         OP [SHFT A,SHFT V,SHFT G]S DO"
         :INPUT" YOU WANT PRINTED";A'EXFC
    1960 FOR I=1 TO A:FOR J=I+1 TO CO
         :IF AL(I)=>AL(J)THEN 1980'LYVU
    1970 H$=AL$(I):H=AL(I):H1$=T$(I)
         :AL$(I)=AL$(J):AL(I)=AL(J)
         :T$(I)=T$(J):AL(J)=H:AL$(J)=H$
         :T$(J)=H1$'JJBI
    1980 NEXT J:NEXT I'CDIL
    1990 OPEN 4,4,7:PRINT#4,"[SHFT T]OP";
         A;"[SHFT B]ATTING [SHFT A]
         VERAGES AS OF ";D2$:PRINT#4'DRBY
    2000 FOR I=1 TO A:PRINT#4,TAB(6)
         :AL$(I)=RIGHT$(AL$(I),
         (LEN(AL$(I))-3))'JKCH
    2005 PRINT#4,USING"##########";AL$(I),
         T$(I);:PRINT#4,USING".###";AL(I)
         :IF I=5*INT(I/5)THEN PRINT#4'LIAP
    2010 NEXT I:CLOSE 4:GOTO 210'DHVX
```

END

by Jeff Babuschak

ML Relocater

for the Commodore 64



ART BAXTER

Whenever a machine language (ML) program is transferred (relocated) to a different area of memory, certain parts of the program are not changed. These parts are all branches (BNE, BEQ, etc.) and JMP's or JSR's. When these jumps are not corrected, the resulting program will lock up. There are two ways to correct this problem. One way, of course, is to go through and correct these branches one by one. The other way is to have a program correct the mistakes and resave a good version on your disk. That is exactly what this program does. ML Relocater will automatically go through a program that you wish to relocate and change all parts of the commands that can vary.

Just Follow the Menu

ML Relocater is very easy to use. The program will ask you for the name of the file that you wish to relocate. After you enter the name, the program will tell you the current starting address of the program. It will then ask you to enter the new starting address of the program that is to be saved on your disk. Don't worry if you enter the wrong starting address—the program will ask you if you want to change your entry. Next, you must tell if the program that you plan to relocate contains any DATA. *DATA* refers to operational codes that have no meaning to the computer. An example would be 66. There is no mnemonic (an abbreviation that is easier to remember than the number itself) for 66. For example, the mnemonic for 169 is LDA; these same abbreviations are used on almost every kind of computer. An assembler converts these numbers to mnemonics, and a disassembler would do just the opposite.

Next, you will enter the name of the newly-relocated program. The program will then begin relocating your program. Be patient! It will take a while to relocate your program. ML Relocater will then ask you to specify where this data is located in your program. If you don't know, type "M" (maybe) for the prompt instead of "Y" (yes). ML Relocater will try to distinguish data from commands. If you do know where the data is located in your program, then enter the beginning and ending addresses, respectively. The program will continue asking for beginning and ending addresses until a 0 is typed at each prompt. By allowing the user to enter multiple entries, it is possible to have a very complex program relocate perfectly.

(Note: Make sure to enter the locations of your data in an incrementing fashion, enter as the program would encounter it.)

The Problem of Messages

Say a program contained some data that would LOAD the program "HI" into memory. Well, this simple message would confuse a normal disassembler that didn't have a logic routine to distinguish data from commands. So the disassembler would respond with JSR 18760 because the message "HI" breaks down into ASCII codes 32, 72 and 73. It so happens that the number 32 has two meanings. One is a space and the other is the command JSR. This is a problem that almost all disassemblers cannot deal with, but ML Relocater does deal with this problem most effectively. Of course, this logic routine will not work all the time, but it will relocate programs that include data at about a 96% correctiveness.

Programs That Relocate Best

Programs that work best with ML Relocater are short and contain no data. However, if the location of data are known, the most complex programs can be relocated with very high correctiveness percentages (from 99% to 100%).

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

ML Relocater

```
10 CLR:PRINT"[CLEAR]":POKE 53280,0
   :POKE 53281,0'ERWD
20 OPEN 1,0:DIM NC(60),C2(110),
   N2(110),AB(40),AE(40)'CPSH
30 PRINT TAB(7)"[BLUE,CMDR A,CMDR S,
   SPACE21,CMDR A,CMDR S]"'CCBG
40 PRINT TAB(7)"[CMDR Z,SHFT +,
   SHFT *21,SHFT +,CMDR X]"'CCXU
50 PRINT TAB(7)" [SHFT -,SPACE3,
   YELLOW] ML RE-LOCATER[BLUE,SPACE4,
   SHFT -] "'CCHJ
60 PRINT TAB(7)" [SHFT -,SPACE21,
   SHFT -]"'CCYI
70 PRINT TAB(7)" [SHFT -,CYAN,SPACE2]
   BY:JEFF BABUSCHAK[BLUE,SPACE2,
   SHFT -]"'CCPM
80 PRINT TAB(7)"[CMDR A,SHFT +,
   SHFT *21,SHFT +,CMDR S]"'CCLY
90 PRINT TAB(7)"[CMDR Z,CMDR X,
   SPACE21,CMDR Z,CMDR X]"'CCUM
100 FOR A=1 TO 20:PRINT"[RED,SHFT Q,
    YELLOW,SHFT Q]";:NEXT A'FIVC
110 GOSUB 480'BDPW
120 PRINT"[HOME,DOWN13,GREEN]
    PLEASE ENTER NEW STARTING ADDRESS
```

```
    :[RED]";:INPUT#1,NS$'CHXK
130 PRINT:PRINT"[DOWN,GREEN]
    ARE YOU SURE? [Y/N]:[RED]";
    :INPUT#1,S$:PRINT'EIBH
140 NS=VAL(NS$):IF NS=0 THEN 120'FOAF
150 IF S$<>"Y"AND S$<>"N"THEN 120'HHKG
160 IF S$="N"THEN 120'DFKE
170 FOR A=1 TO 20:PRINT"[RED,SHFT Q,
    YELLOW,SHFT Q]";:NEXT A:PRINT'GJGJ
180 PRINT"[HOME,DOWN17,GREEN]
    DOES THIS PROGRAM CONTAIN DATA?
    [Y/N/M]:[RED]";'BBPQ
190 INPUT#1,DA$'BFMF
200 IF DA$<>"Y"AND DA$<>"N"AND
    DA$<>"M"THEN 180'KMUG
210 PRINT'BACW
212 PRINT"[HOME,DOWN19,GREEN]
    ARE YOU SURE? [Y/N]:[RED]";
    :INPUT#1,S$:PRINT'DHJJ
220 IF S$<>"Y"AND S$<>"N"THEN 210'HHKE
230 IL=-1'CDJB
240 IF S$="N"THEN 180'DFQD
250 IF DA$="M"THEN 410'DGLE
260 IF DA$="N"THEN 410'DGMF
270 IL=IL+1:PRINT"[HOME,DOWN7]"'DGUH
280 FOR T=1 TO 14:PRINT"[SPACE39]";
    :NEXT T:PRINT'GJUO
290 PRINT"[HOME,DOWN7]"'BAJG
300 FOR A=1 TO 20:PRINT"[RED,SHFT Q,
    YELLOW,SHFT Q]";:NEXT A:PRINT'GJGE
310 PRINT"[UP,GREEN]ENTER BEGINNING
    ADDRESS:[RED]";:INPUT#1,AB$(IL)
    :PRINT'DMQJ
320 PRINT"[GREEN]ENTER ENDING ADDRESS
    :[RED]";:INPUT#1,AE$(IL)
    :PRINT'DMGJ
330 AB(IL)=VAL(AB$(IL))
    :AE(IL)=VAL(AE$(IL))'EGMJ
340 PRINT"[HOME,DOWN12,GREEN]
    ARE YOU SURE? [Y/N]:[RED]";
    :INPUT#1,S$:PRINT:PRINT"[UP]";
    'EJAM
350 IF S$="Y"AND AE(IL)=0 AND
    AB(IL)=0 THEN 401'HTOL
360 IF AB(IL)>AE(IL)THEN 290'DPHI
361 IF AE(IL)<SA THEN 290'DLCI
362 IF AB(IL)<SA THEN 290'DLYJ
370 IF S$="Y"AND(AE(IL)-AB(IL))<1
    THEN 290'GUEM
380 IF S$<>"Y"AND S$<>"N"THEN 340'HHOL
390 IF S$="N"THEN 290'DFSJ
400 GOTO 270'BDIY
401 PRINT:PRINT"[UP2]"'CBSB
410 FOR A=1 TO 20:PRINT"[RED,SHFT Q,
    YELLOW,SHFT Q]";:NEXT A:PRINT
    :PRINT"[UP2]";'HLAJ
420 FOR T=0 TO IL:AB(T)=ABS(VAL(AB$(T)
    )-SA):AE(T)=ABS(VAL(AE$(T))-SA)
    :NEXT T'MRAR
430 PRINT"[DOWN,GREEN]ENTER NAME OF
    DESTINATION FILE:[RED]";
    :INPUT#1,D$:PRINT'DHXM
440 PRINT"[UP]";:FOR A=1 TO 20
    :PRINT"[RED,SHFT Q,YELLOW,SHFT Q]
    ";:NEXT A:PRINT'HLKL
450 CLOSE 1:OPEN 1,8,1,"@0:"+D$+",P,W"
    :HI=INT(NS/256):LO=NS-(HI*256)
    'KHJS
460 PRINT#1,CHR$(LO);:PRINT#1,
    CHR$(HI);'EPUJ
470 MP=11000:MR=12000:GOTO 570'DTEL
480 REM *** DISK ROUTINE ***'BRTK
490 PRINT"[HOME,DOWN9,GREEN]
    ENTER NAME OF ML FILE:[RED]";
    :INPUT#1,F$'CGWP
500 PRINT:FOR A=1 TO 20
    :PRINT"[RED,SHFT Q,YELLOW,SHFT Q]
    ";:NEXT A:PRINT'HKLH
510 OPEN 2,8,2,"0:"+F$:OPEN 15,8,15
    :INPUT#15,A$,B$,C$,D$
    :IF VAL(A$)>0 THEN 1260'IQON
520 GET#2,LO$:GET#2,HI$
    :LO=ASC(LO$+CHR$(0))
    :HI=ASC(HI$+CHR$(0))'KKXP
530 SA=HI*256+LO'DJAG
540 PRINT"[UP,GREEN]STARTING ADDRESS
    IS:[RED]"SA'BCVK
550 PRINT:PRINT"[UP2]":FOR A=1 TO 20
    :PRINT"[RED,SHFT Q,YELLOW,SHFT Q]
    ";:NEXT A:PRINT'ILCO
560 RETURN'BAQF
570 REM *** SET-UP ***'BMWJ
580 IL=0:READ NC(D)'CJSK
590 IF NC(D)=999 THEN 610'DLAM
600 D=D+1:GOTO 580'DHQD
610 READ C2(D2),N2(D2)'BNDE
620 IF C2(D2)=999 THEN 640'DMAG
630 D2=D2+1:GOTO 610'DJKG
640 EA=0'BDDF
650 EA=EA+1:GET#2,X$:DA=ASC(X$+CHR$(0)
    ):POKE EA+MR-1,DA:IF ST<>0 THEN
    CLOSE 2'PKNX
660 IF ST=0 THEN 650'DGKJ
670 R=EA+1'CEAJ
680 IF DA$="N"OR DA$="Y"THEN 810'FJRN
690 REM *** CHECK FOR DATA ***'BSIN
700 DA=PEEK(MR+L+YY):FOR C=0 TO D
    :IF NC(C)=DA THEN NG=NG+3
    :YY=YY+2'OHAS
710 NEXT C:YY=YY+1:IF YY<5 THEN
    700'GOPJ
720 YY=0:PRINT"[HOME,YELLOW]"L'CFAG
730 DA=PEEK(MR+L+YY):FOR C=0 TO
    D2'HOCM
740 IF C2(C)=DA AND N2(C)=2 THEN
    NG=NG+2:YY=YY+1'JYBQ
750 IF C2(C)=DA AND N2(C)=1 THEN
    NG=NG+1'HSGO
760 NEXT C:YY=YY+1:IF YY<5 THEN
    730'GOSO
770 IF(NG/YY)<1 THEN FOR T=1 TO YY
    :POKE MP+L,PEEK(MR+L):L=L+1:NEXT T
    :L=L-1'QGLB
780 IF(NG/YY)<1 AND L<R THEN YY=0:NG=0
    :OL=L:GOTO 690'KYMV
790 IF(NG/YY)<1 AND L>=R THEN
    1350'HNLR
800 NG=0:OL=L:YY=0'DLYH
810 REM *** RELOCATION ROUTINE
```

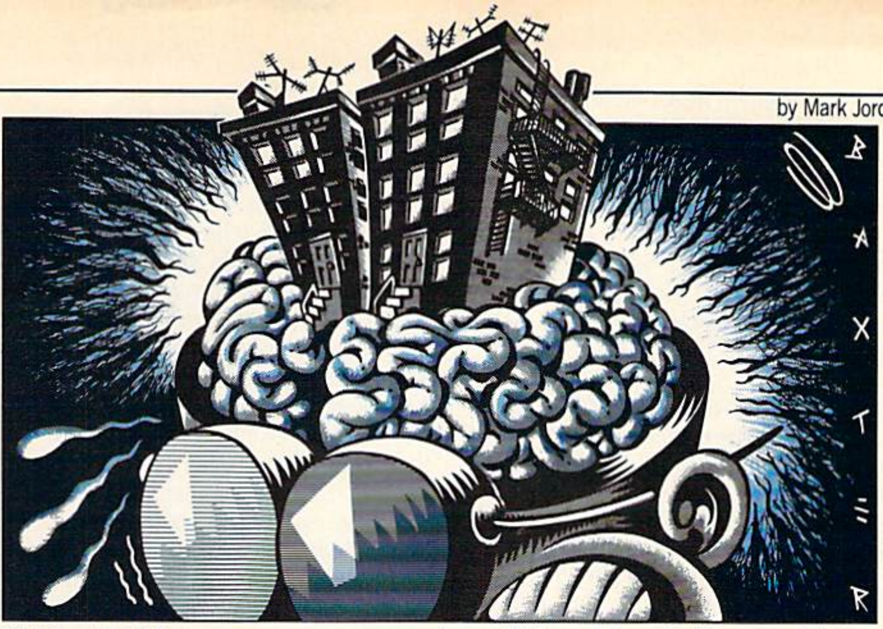
```
    ***'BXKJ
820 IF L=>AB(IL)THEN DI=(AE(IL)-AB(IL)
    )'GXON
830 IF L=>AB(IL)THEN FOR T=0 TO DI
    :POKE(MP+AB(IL)+T),
    PEEK(MR+AB(IL)+T):NEXT'OLWW
840 IF L=>AB(IL)THEN IL=IL+1
    :L=T+L'IQFP
850 XY=0:PRINT"[HOME,YELLOW]";L
    :DA=PEEK(L+MR):FOR C=0 TO D'ISCR
860 IF NC(C)=DA THEN GOSUB 960'EKKM
870 NEXT C:IF XY=3 THEN 930'EIXN
880 XY=0:DA=PEEK(MR+L):FOR G=0 TO
    D2'HQTS
890 IF C2(G)=DA AND N2(G)=1 THEN POKE
    MP+L,DA:L=L+1:XY=1'KCOY
900 IF C2(G)=DA AND N2(G)=2 THEN
    GOSUB 2000'GRLK
910 NEXT G'BBAE
920 IF XY=0 THEN POKE MP+L,DA
    :L=L+1'HNEM
930 IF L>=R THEN 1350'EGBJ
940 IF DA$="M"AND(L-OL)>=3 THEN
    700'HMDO
950 GOTO 820'BDJJ
960 REM *** PROCESS 3 BYTE COMMS.
    ***'BYOP
970 XY=3:L1=PEEK(L+MR+1)
    :H1=PEEK(L+MR+2):N=H1*256+L1'MFQA
975 IF N<SA OR N>SA+EA+1 THEN GOSUB
    2100'INAX
980 IF N>53247 OR N<2048 THEN GOSUB
    2200'GPGS
990 IF N<49152 AND N>40959 THEN GOSUB
    2300'GQQT
1000 POKE MP+L,DA'CGSU
1005 IF NS>=SA THEN NJ=(H1*256+L1)+
     (NS-SA):IF NJ>65280 THEN N=53248
     :GOTO 980'OOBQ
1010 IF NS<SA THEN NJ=((H1*256)+L1)-
     (SA-NS)'IXCE
1020 POKE MP+L+2,INT(NJ/256)'FMAB
1030 POKE MP+L+1,INT(NJ-(256*(INT
     (NJ/256))))'IXBG
1040 POKE MP+L,DA:L=L+3'EKJC
1050 RETURN'BAQX
1060 REM *** 3 BYTE DATA ***'BPMD
1070 DATA 109,125,121,45,61,57,14'BXQE
1080 DATA 30,44,205,221,217,235,
     204'BAAG
1090 DATA 206,222,77,93,89,238,
     254'BYJH
1100 DATA 76,108,32,173,189,185,
     174'BAIY
1110 DATA 190,172,188,78,94,13,29,
     25'BBHA
1120 DATA 46,62,110,126,237,235,
     249'BARB
1130 DATA 141,157,153,142,140,999'BXCC
1140 REM *** 1&2 BYTE DATA ***'BRWC
1150 DATA 105,2,101,2,117,2,97,2,113,
     2,41,2'BIOF
1155 DATA 2,37,2,53,2,33,2,49,2,10,1,
     6,2,22,2'BKAL
1160 DATA 144,2,176,2,240,2,36,2,48,2,
     208,2'BIGG
1170 DATA 16,2,0,1,80,2,112,2,24,1,
     216,1,88'BIOH
1175 DATA 1,184,1,201,2,197,2,213,2,
     193,2'BGEM
1180 DATA 209,2,224,2,228,2,192,2,196,
     2,198,2'BKNJ
1190 DATA 214,2,202,1,136,1,73,2,69,2,
     85,2,65'BKAK
1195 DATA 2,81,2,230,2,246,2,232,1,
     200,1'BFOO
1200 DATA 169,2,165,2,181,2,161,2,177,
     2'BEWB
1210 DATA 162,2,166,2,182,2,160,2,164,
     2,180,2,74,2,70,2,86,2,234,1'BGVH
1220 DATA 9,2,5,2,21,2,1,2,17,2,72,1,
     8,1,104,1,40,1,42,1'BVGG
1230 DATA 38,2,54,2,106,1,102,2,118,2,
     64,1,96,1,233,2,229,2,245,2,225,
     2'BLCK
1240 DATA 241,2,56,1,248,1,120,1,133,
     2,149,2,129,2'BPEH
1250 DATA 145,2,134,2,150,2,132,2,148,
     2,170,1,168,1'BQBI
1255 DATA 186,1,138,1,154,1,152,1,999,
     0'BEBL
1260 REM *** ERROR ROUTINE ***'BSIG
1270 PRINT"[HOME,DOWN17,RIGHT4,GREEN,
     RVS]IO/ERROR[RVOFF]
     :[RED]";A$;",";B$;",";C$;",";
     D$'BPNL
1280 CLOSE 1:CLOSE 2:CLOSE 15'DGDG
1290 POKE 54276,0:S=54272:V=S+24
     :POKE V,4'FXFM
1300 POKE S+5,0:POKE S+6,15*16
     :POKE S+4,33'HSWE
1310 POKE S,4:POKE S+1,48
     :FOR A=0 TO 350:NEXT'HQHE
1315 POKE S,2:POKE S+1,24
     :FOR A=0 TO 350:NEXT'HQYJ
1320 POKE V,0:PRINT:PRINT TAB(8)"
     [YELLOW]PRESS ANY KEY TO
     RESTART"'EHAJ
1330 IF PEEK(197)<>64 THEN POKE 198,0
     :RUN'HNNG
1340 GOTO 1330'BEEB
1350 REM *** CLOSE DISK ***'BPSF
1360 FOR A=0 TO EA:PRINT#1,
     CHR$(PEEK(MP+A));:NEXT A'IRGK
1370 PRINT#1,CHR$(0);CHR$(0);CHR$(0);
     CHR$(0):CLOSE 1:CLOSE 2:CLOSE 15
     :END'JAON
2000 POKE MP+L,DA:L=L+1
     :POKE MP+L,PEEK(MR+L):L=L+1:XY=2
     :RETURN'MEDJ
2100 POKE MP+L,DA:POKE MP+L+2,H1
     :POKE MP+L+1,L1:L=L+3:RETURN
     :RETURN'MDCJ
2200 POKE MP+L,DA:POKE MP+L+2,H1
     :POKE MP+L+1,L1:L=L+3:RETURN
     :RETURN'MDCK
2300 POKE MP+L,DA:POKE MP+L+2,H1
     :POKE MP+L+1,L1:L=L+3:RETURN
     :RETURN'MDCL
```

END

by Mark Jordan

Hidden Video Memory

In the next few months, we'll be exploring the technical, the whimsical and a few things in between. If there's a topic you'd like to see covered, write to Mark in care of Commodore Magazine, 1200 Wilson Drive, West Chester, PA 19380.



ART BAXTER

You've heard the startling statistics: the human brain operates at only about 1% capacity . . . and that's for the Einsteins of the world. Most of us are lucky if we use more than eight brain cells in our entire lives. And there are a few people (like that guy who always wedges in front of you in heavy traffic) who bypass the brain entirely, operating mainly on nerve, emotion and beer. Okay, I exaggerate, but the truth is we humans have a lot of potential brain power we aren't putting to use.

Here's another statistic: most Commodore 128D owners are working their VDC's (Video Display Controller) at only 25% capacity. This is no exaggeration, at least not concerning the video RAM potential in your machine. Commodore ships the 128D with a full 64K of RAM available for the VDC to use. However (and this may strike you as odd), Commodore also ships those same 128D's with a certain bit set so that the machine thinks it has a mere 16K of RAM. Why would they do that? For compatibility with older 128's, no doubt. It makes sense, but what good is that extra 48K of memory?

Plenty good. Unfortunately, thus far very few software programs have taken advantage of it (*BASIC 8* and its offspring are about the only ones). It's time we did something about that. We will, with some tips, tricks and a couple very short type-in programs. Whether you're a programmer or not, I think you'll find it quite interesting to see your hidden RAM brought to the surface.

Before continuing, a word must be said to those of you who don't own 128D's. You can (in fact, you may already have) upgrade your machines to 64K video RAM. At the close of this article, you'll find the address where you can send for your kit. So keep reading, this article is for you too.

Hidden RAM

Let's start with a brief overview of what video memory is all about anyway. As you know, your Commodore 128 has 128K of RAM. But that's not all the RAM it has. The VDC has its own private RAM. On the old 128's, this amounted to 16K of memory. Not bad. With 16K the VDC was able to have an 80-column screen with matching attributes as well as two complete character sets. Plus there was even an extra 4K left over.

You may be aware that a chip that can address 16K of RAM can just as easily address 64K. Fortunately for us 128D users, the engineers who designed the VDC had the foresight to allow for addressing a whole 64K of video memory if and when it became available. That way was via one bit (number 4) on one register (number 28): set that bit to 1 instead of the default 0, and the VDC can make use of 64K RAM.

It isn't hard at all to set that bit to 1. Let's do it. Type the following in the direct mode. Please recall from last month's discussion that 52684 is the address of a built-in routine that writes to VDC registers, and 52698 is the address of one that will read VDC registers. Also, you'll recall (with a little help from me) that to write to the registers we do it like this: SYS WR,VALUE,REGISTER. An extra step is involved in reading a register: SYS RE,, REGISTER:RREG A. The second command—RREG A—will put the register's value into the variable A.

Okay, enough review. Try this:

WR=52684:RE=52698:SYS RE,,28: RREG A:PRINT A [RETURN]

Your computer will respond by printing a 47 to the screen. That 47 is the contents of register 28 upon power-up. Here's what 47 looks like in binary: 0 0 1 0 1 1 1 1. The first four bits (reading from right to left) are all 1's, and they don't mean a thing. Trust me. The next bit is bit 4 (remember, you always start counting from 0) and it isn't set. It's a 0. That 0 indicates to the VDC that only 16K of RAM is available. But you and I have 64K (or soon will have), right? We need to set that bit to 1.

The way to do that involves Boolean logic: simply OR the 47 we found in register 28 with the number 16. If you don't understand Boolean logic, don't worry about it. Just type:

SYS WR,A OR 16,28 [RETURN]

What we've done is to place the same value (47) back into that register (we don't want to mess up any other bits) while at the same time toggling the fourth bit on. The OR 16 does that. (In case you're wondering, if you printed A OR 16 you'd get 63 which in binary is 0 0 1 1 1 1 1 1—see, that fourth bit is set.)

Great! Fantastic! We now are able to address 64K of memory! All right! Yabadabado! . . . Wait a second, nothing happened. What a waste! Rip-off! I'm not reading another word! How dare this guy—

YOU wait a second. Get control of yourself. (Sheesh, the things I have to put up with.) So far we have simply informed the VDC that there are an extra 49152 bytes available. Now we need to use them.

There are all kinds of possibilities for filling up that extra RAM. For example, we could fill it with several bitmaps. Then simply by changing registers 12 and 13—pointers to the start of screen memory—we could instantly change pictures. Or we could use the extra RAM to do some neat tricks with attributes such as to save several different attribute fields and flip rapidly amongst them using the attribute start address registers (20 and 21). This would allow for simple color cycling, some fade-outs, and so forth. Another possibility would be to hide up to six more charac-

ter sets in this RAM as well and then quickly cycle the character set register (also register 28) to achieve animation.

Or, we could use that extra RAM to type into. That's what the program at the end of this piece does. It lets us use a grand total of 25 screens at a time. We'll get to that shortly.

Screen-Hopping in Direct Mode

Before we type it in, let's sample the technique from the keyboard. Type the following:

WR=52684:RE=52698:CH=52748 [RETURN]
SYS WR,63,28:SYS CH [RETURN]
SYS WR,64,12:POKE 2606,64 [RETURN]

Let's look at each line. The first sets up the locations of the built-in machine language routines we will use. I've already mentioned WR and RE, so let me confine my comments here to CH. The 128 has a built-in routine for defining the character set for the 80-column mode. It's found at 52748. Any time you SYS that spot, the character set will be redefined. The reason we need it here is because, for some reason, whenever you tell the VDC you have 64K available, one of the two character sets will get messed up. At least that's true on my 128D.

That's why we used that SYS on the second line. If you look carefully, you'll see that we first used the WR routine to put a 63 into register 28. This has the same effect as what we did earlier by first reading register 28 then ORing it with 16; it's just simpler this way. After poking that 63 into place, the character set is indeed messed up. Thus the follow-up SYS CH fixes it. If during the course of your fiddling with the VDC you ever find an altered character set (everything may look crazy) then type SYS 52748 (or CH if you've previously defined it). Sometimes when experimenting with the VDC, the character set may get so garbled you'll have to type blindly.

The final line above places a 64 in register 12. This register plus the next one (13) together form the address of where the VDC looks for what's on the screen. Normally these registers both contain 0's because that's where the screen's contents are held upon default—in the first 2000 bytes of the VDC's private memory. When we place a 64 in register 12, we are in effect telling the VDC that it should check memory beginning at 16384 for the screen's contents.

Machine-language programmers will instantly be able to figure out how a 64 placed here tells the VDC to look at 16384 because they are immediately multiplying 64 times 256 in their heads (using several crucial brain cells in the process). The rest of us need a little explanation. Since the 128 is an eight-bit machine and since eight-bits can never express a number higher than 255, it takes two bytes to form an address. Register 13 is the low byte, register 12 is the high byte. We can always take register's 13 contents as is—they mean what they say. But in register 12, each time we increment its value by 1, we increment the entire address by 256. Thus, if both registers were set to the max (255 in both bytes), the address they pointed to would be 255 * 256 + 255 or 65535.

One thing you machine-language guys should be careful of: with the VDC the high byte comes first. This is opposite regular 6502 CPU processing, so be careful. It's easy to forget and reverse things and then spend two hours debugging non-bugs.

So we have placed our 64 in the high byte and left the low byte (register 13) alone, and the VDC instantly begins displaying whatever happens to be in the first 2000 bytes following 16384. Most likely it's garbage. A quick CLR/HOME can clear things up . . . but not if we don't POKE 2606,64 first. Why that? Because the screen-editor routine that we've all gotten so used to will check location 2606 to see what the high byte of screen memory is. We must make it always match what's in register 12. Otherwise, we can type, but our typing will take place on the memory at 0000 rather than the screen we're looking at.

Just to see how things work, type some comments on the screen. Now move down a line and type this:

SYS WR,72,12:POKE 2606,72

A new screen of garbage will appear. Clear it, type some different comments and then:

SYS WR,80,12:POKE 2606,80

Repeat the process. You can do it as many times as you like (adding 8 to the value you're poking) until you reach 248. Always be sure to POKE 2606 with that same value. As you'll find, you can have up to 24 of these new screens.

Now let's go back and see if our first screen change is intact. Type:

SYS WR,64,12:POKE 2606,64

By George, it is. Can you see how useful this can be? If not, let me convince you further with a simple demo. Type in this program:

```
10 RE=52698:WR=52684:CH=52748'DXRE
20 SYS WR,63,28:SYS CH'CLMB
30 PG=64:U=14:V=54'DMEE
40 FOR T=0 TO 23:PRINT"[CLEAR]"'EFNE
50 CHAR,U,10,"--------->"'BGAE
60 CHAR,V,20,"<========="'BGWG
70 U=U+1:V=V-1'EHUH
80 SYS WR,PG,12:POKE 2606,PG
   :PG=PG+8'EWVL
90 NEXT'BAEF
100 PG=64:N=8'CHLX
110 DO:SYS WR,PG,12:PG=PG+N'EPHC
120 FOR I=0 TO 10:NEXT'EFIA
130 LOOP UNTIL PG>239 OR PG<72'FJXE
140 N=-N:GOTO 110'DGCC
```

As always, save it before you run it. When you run it, you'll see it clears 24 screens and places two crude arrows on them. All that takes place in lines 40-90. Then starting with line 100, the program will cycle back and forth through these screens by updating the screen address in register 12 rapidly. Animation is the result. If you check line 120, you'll notice that even with BASIC, the animation potential is so strong that I needed to include a brief slow-down loop. If you take out line 120, the screen cycling blurs.

This demo isn't the type that's going to get strangers to go out and purchase 128D's, but it shows potential power. With some redefined character sets and a little imagination, you could make the entire screen throb with activity. This method of animation is called "page-flipping." I plan to create a future game for this column that makes use of this effect.

Now that you're convinced of the power of the hidden RAM, it's time to type in program listing number two "Page-Flipper." Save it before running the first time. When you do run it, you'll note the disk drive runs for a brief while. This is because the listing will save the machine-language code in a binary file which you can use any time you power-up by typing BLOAD"PAGE-FLIPPER". You'll need to type SYS 3072 to activate it. This first time, however, it will activate itself.

"Page-Flipper" is an interrupt-driven routine which lets you jump around quickly from one screen to another. The way you make the jumps is to: (1) press the ALT key, and then (2) press any alphabetic key. Don't press the two simultaneously; make it a one-two process. For instance, to go to the first screen, press ALT then press A. An "A" will show in the upper-left part of the screen to remind you what screen you are using. To use the 24th screen, press ALT then "X". The 25th screen is the default screen, the one that starts at location 0 in the video RAM. You get that one by pressing ALT then "Y" or "Z".

This makes for a mighty handy programming tool. Imagine you're program-

ming in BASIC or using the machine-language monitor and you want to list some new lines but don't want to lose what's on the screen. Just jump to another screen, list the new lines and flip back and forth to compare the two with a touch of keys. Or maybe you could list a directory to one screen (how about screen D?) and then jump to it whenever you want to take a look. There are dozens of applications.

A few explanations are in order. For one thing, the attributes are not changed. Therefore, if you put flashing characters or change colors on one screen, that change will occur for all. For another, each time you first enter a screen it will be uncleared of garbage. You'll need to use the CLR/HOME key to do that manually.

Also, there are a couple quirks. One thing that might happen is you may temporarily enter the Twilight Zone if you press ALT then the follow-up key combination too quickly. Just press RUN/STOP and RESTORE to un-lock things. Also, you may sometimes find you've corrupted the character set. Again, use the RUN/STOP-RESTORE combination. (A jump to the character-set routine is included in the NMI interrupt). I haven't discovered exactly why these things happen, but I have one suspicion: documentation from Commodore says you shouldn't service the VDC during interrupts and this routine does that. At any rate, there are no major problems, and the routine is a mighty handy programming tool.

If you've gotten this far, I'm happy to report you have not only learned how to tap into your VDC's extra brain power, you've also subconsciously exercised ten previously-dormant brain cells. That's 18 down, 62 trillion to go. Give or take a few.

Hey, it's a start.

Graphic Booster 128 available from:
Combo Ltd.
P.O. Box 2560
Branchville, NJ 07826

Before typing this program, read "How to Enter Programs" and "How to Use the Magazine Entry Program." The BASIC programs in this magazine are available on disk from Loadstar, P.O. Box 30008, Shreveport, LA 71130-0007, 1-800-831-2694.

Page-Flipper

```
10 FOR T=Ø TO 139:READ A$
   :POKE 3Ø72+T,DEC(A$):NEXT'IUOG
2Ø BSAVE"PAGE-FLIPPER",BØ,
   P3Ø72 TO P3212'CPYG
3Ø SYS 3Ø72'BEFA
4Ø DATA A9,3F,A2,1C,2Ø,CC,CD,78,A9,29,
   8D,14,Ø3,A9,ØC,8D'BWVK
5Ø DATA 15,Ø3,8D,19,Ø3,A9,75,8D,18,Ø3,
   A9,ØØ,8D,FF,ØC,58'BWZL
6Ø DATA 2Ø,ØC,CE,A9,93,4C,D2,FF,EA,AD,
   FF,ØC,DØ,14,A5,D3'BWMM
7Ø DATA C9,Ø8,DØ,ØB,8D,FF,ØC,A9,13,2Ø,
   D2,FF,4C,33,FF,4C'BWAN
8Ø DATA 65,FA,A4,D4,CØ,58,FØ,F7,B1,CC,
   29,3F,FØ,12,C9,18'BWYO
9Ø DATA 9Ø,Ø5,A9,ØØ,4C,6Ø,ØC,AA,A9,38,
   18,69,Ø8,CA,DØ,FA'BWCP
1ØØ DATA A2,ØC,8D,2E,ØA,2Ø,CC,CD,A9,
    ØØ,8D,FF,ØC,85,D4,85'BWSF
11Ø DATA D5,4C,37,ØC,EA,A9,2F,A2,1C,
    2Ø,CC,CD,2Ø,ØC,CE,A9'BWLG
12Ø DATA 4Ø,8D,18,Ø3,A9,FA,8D,19,Ø3,
    4C,4Ø,FA'BKPE
```

END

Inside Q-Link/Q-Link Utilities

Continued from page 44

Fast Loader. This utility will let you load the Omega-Q utility in burst mode on a Commodore 128 in about 15 seconds. By comparison, normal load time in 64 mode is typically slightly over a minute. This fast loader uses a machine-language file that's included to burst load the Omega-Q program; it then switches the machine over to 64 mode automatically. It works on a Commodore 128 with either a 1571 or 1581 disk drive, and the download file is only four blocks long!

Q-Link has been constantly changing, with plenty of restructuring, new areas, new games and new people. But Quantum has not made any changes in the basic software for quite some time. Some day we may see a new version of the Q-Link software, but why wait? There are a number of basic improvements being developed by industrious users out there. Thankfully, they've been willing to share their accomplishments with others. If you come across another useful gem in the libraries, let me know so we can spread the word!

By the way, the video game section in my New Product Information library got a new entry point from the Just For Fun section several months ago. By the looks of the increased activity, this is quickly becoming a very hot area. I've been posting press releases and news about the various arcade and home video games, and there are message boards for hints and a place to brag about those high scores. With any luck, we'll be adding a download library to save the in-depth reviews and plenty of hints users are now posting; plus possibly a buy/sell/swap message board too.

Before I wrap things up, let me climb up on my soapbox to cover one last subject. Whenever I take a look around the system I find a lot of messages with meaningless or confusing message headings or worse yet—the same message being posted in a number of different message boards.

How many times have you looked through the Classified Wanted message board in The Mall and seen a message with just the word *Wanted* in the heading? Does that make any sense to you? Why would that message even be in that message board if it wasn't for something the person *wanted?* Wouldn't it make more sense to include a brief comment about *what* is wanted? Same goes for the other Classified boards. There are always a number of messages with simply "For Sale" in the heading.

I don't know about you, but I usually wind up skipping messages like these and not wasting my time. If I'm looking through a given message board, I'm usually skimming the headings quickly and reading only the messages that seem to be of interest. If someone doesn't take the time to include enough information in the headline to catch my eye, that message doesn't get read. I'm sure I'm not alone on this, so if you're new to the system—my suggestion is to use a little common sense when posting a message. Considering that most of the message boards are plus areas, you're not only wasting time, you're wasting money too.

Now that I got that off my chest, I hope everyone enjoys the coming summer. I'll be taking a much-needed vacation at the end of this month, so hold off on any E-Mail until early July. Other than that, I can usually be reached almost daily via E-Mail to RBaker on Q-Link (or RBaker PC on PC-Link) if you have any comments, suggestions or ideas for future columns. If anyone is using MS-DOS machines and is interested in knowing more about PC-Link, let me know and I'll consider it a topic for a future column.

Continued from page 16

displayed on the screen at all times, and this will aid you in determining when to set up or break camp.

When combat is entered, the scene does not change to a tactical view of the combat area; the program will simply display a list of attacking monsters in the display window, then prompt you for your combat orders. This may disappoint the strategists among you who find that the best offense is often waged by the team on the highest ground. While you may attempt to flee a battle when the going gets tough, you won't always be successful. Once you attempt to flee, subsequent attacks for the rest of your characters are skipped for the turn, which, in effect, gives the opposition a free punch. Needless to say, several unsuccessful fleeing attempts can demolish your party. You can, however, attempt to negotiate with your adversaries. ("By the by, have you seen my eyebrows, old chap?") Your opponents may decide to take your money and run, or take your money and keep fighting. Either way, it can be demoralizing to have to pay for your life, so try to pick your fights when you can.

There are 84 spells that can be cast by the four classes of magic-users. If a character has the prerequisite amount of power points, a spell can be cast by typing in its oriental name. While that is fine for spells whose names are four or five letters long, it can become cumbersome for long-winded spell names. Trying typing in "Motunasu" or "Byokinasu" several times over the length of one battle, and you'll see what I mean.

Identifying armor and swords can be equally tedious, for instead of finding chain mail, or plate mail, your party may happen upon a suit of Haramakido (full body armor) or pick up Wakizashi (short sword). This means you can expect to initially spend a lot of your time sifting through the 25-page manual while trying to remember spell names or identify armor and weapons.

To help out, the program includes a macro function, where the function keys can be programmed to store a sequence of key presses. I found this to be of obvious value for spell casting, but the macros cannot be used during combat—which tends to nullify the benefit of having macro keys in the first place.

But this is a game with Asian overtones, is it not? So one might expect that oriental names would rightly be substituted for the worn-out props used in other games. Oddly enough, I found—aside from the long and awkward spell and equipment names—the game falls short of bringing to life the flavor of a fantasy Orient. In fact, the quest could have taken place in medieval Europe without any appreciable loss of depth. If the game had stressed, early on, some kind of oriental discipline or culture, perhaps I would have gladly typed in the spell names. But after a while, the Asian theme seemed rather pointless.

This does not mean, however, that *Deathlord* does not have its merits. Though is does lack a bit of depth, it is a well-done and enjoyable game, and I would have no problem devoting the 150–200 hours of play required to solve the quest, had I the time or inclination to do so. Connoisseurs of fantasy role-playing games, however, will undoubtedly want to add this one to their libraries.

Playing Tips

- Most towns and cities have guards who will pounce immediately if you attack town citizens (including monsters). So let threatening monsters throw the first punch. The guards will look the other way.
- You'll need a ship to explore Kodan, but you probably won't want to pay the exorbitant fee required to purchase one. Instead, attack a ship. If you can overcome the sailors aboard, you will have a vessel worth 10,000 in gold!
- You may be tempted to generate a thief to pick locks or disarm traps, but thieves tend to be weak fighters. Try generating a fighter with massive strength. You'll then be able to smash down most doors without much trouble.
- Without food, characters lose hit points, so always check each character's food supply prior to setting up camp for the night. There is no way to abort the camp once you specify how many hours you want to sleep, so a character low on food may not have enough hit points to survive an eight- or nine-hour camp. Likewise, never set up camp with a character who's been poisoned.
- Concentrate on elevating your magic-users first. They will be relatively ineffective until the higher levels are attained.
- Many times as you explore cities, you'll notice rooms whose inside dimensions don't seem to match its outside dimensions. Bump against the room's interior walls. More than likely, you find a hidden door.
- Town guards have long memories. Once they've turned against you, they will attack each time you return to the town. ■

Letters

Continued from page 4

We're Here to *Pump* You Up

Dear Mark Jordan:

I enjoy each and every article that you author. "Pumping GEOS" is required reading for me. Each month I look forward to putting your hints to work.

This letter was provoked by your statement [March 1989] that you failed to inspire Mr. Grove and his understanding of *geoPublish*. If Mr. Grove had read and reviewed the documentation for *geoPublish* (a book in itself) and faithfully followed the tutorial, he would probably understand the power of *geoPublish*. *GeoPublish* (or for that matter GEOS) is not learned overnight, or from one or two sessions at the computer.

As the president of a local Commodore User's Group, I find that people tend to disregard the documentation as required reading. Woe unto the individual who approaches GEOS or any computer software with such an attitude; his learning curve will be difficult. The person who approaches GEOS without reading the documentation will become disenchanted with the software.

Any subject you desire to learn requires that you study, and GEOS is no exception. You have to know what the program is, how it operates, what it is capable of doing and what its constraints are, then and only then can you attempt to criticize.

GEOS is not for everyone, but for those who have found a need, there is no better product to do the job that GEOS accomplishes. The 64 and 128 computer users have never known such power prior to GEOS. I would advise Mr. Grove to ground himself in the fundamentals of GEOS. Read and reread the documentation and follow the tutorials.

As for you, Mark, keep Pumping GEOS, it only enhances my understanding and knowledge of the power of GEOS. GEOS is a continual and evolving learning experience.

An avid fan of yours and GEOS,
John Dempsey
Baltimore, MD

Correction

"Those Generous Pirates" [April 1989] referred to a reward offered by the Software Publishers Association for people who report bulletin boards listing copyrighted software. This policy has been discontinued.

Address letters for publication to:
Letters Editor, *Commodore Magazine*,
1200 Wilson Drive, West Chester, PA 19380

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front of the crease and let your wingers fight for the puck in the corners.

Coaching

Coaching can be just as much fun as playing. (For the ultimate challenge, try coaching and playing simultaneously.) You can set up six different player formations for any situation—even strength, power play or shorthanded—and you can change your goalie.

WGH offers a number of simple keyboard coaching controls which let you call some very intricate plays. You can change lines on the fly (using the AMIGA key with function keys 1–3). You can spread out your forward players, cross over the centerman with either winger, or flood the right or left side of the attack zone using the ALT key with function keys 1–5. When killing a penalty, use the same key combinations to indicate five styles of play from conservative to very aggressive.

While coaching you can also choose to control a specific player by pressing the SHIFT key with the function keys. A reference card included in the package simplifies the coaching keyboard controls.

If all else fails, and you're down by a goal with only minutes remaining in the game, you can pull your goalie in favor of an extra forward. As NHL coaches say, it's a last-ditch effort that seldom works, but what have you got to lose?

Sounds and Graphics

The sounds of the rink are superb. The puck bounces off the boards with a hollow thud while bodies actually *crunch* on impact. The crowd maintains a low roar at all times and really lets loose when the home team closes in on the opponent's goal, when a fight breaks out or when their team scores.

A buzzer and a red light behind the goal indicate that a goal has been scored, a siren sounds, and the scoring teammates embrace the goal scorer. The goal is then announced with scoreboard fireworks or an animated puck followed by the names of the scoring and assisting player(s).

The overhead scoreboard shows a close-up of any fights that may break out. These digitized donnybrooks occur in real time and last for about eight seconds before the ref steps in. (As a hockey purist, I was glad for the option to disable fights.)

The program also offers a scoreboard depiction of the referee calling penalties. The ref's choreographed repertoire includes slashing, tripping, hooking, holding, elbowing, cross-checking, roughing, high-sticking, spearing and charging—all accurately signaled. And like all good refs, these on-screen peace-keepers use a *shrill* whistle to stop play.

At any time during the game you can view an instant replay. Hit "T" for time-out, and select Instant Replay from the Timeout Menu. Using a sliding gauge you can run the last eight seconds of play (or play since the last faceoff) forward and backward while controlling the speed.

The ice surface is particularly well done. At the opening face off, the surface is light blue, but a white trail is made by every skater on the ice. As the game progresses the ice gradually turns white. Naturally, there is a Zamboni machine that takes about three minutes to resurface the ice between each period. (You can click on the mouse or joystick button to proceed to the next period without delay.)

The last word goes to Gretzky: "You may not learn about controlling the puck with the side of your skate or how to make a feather pass, but I guarantee you'll learn about the importance of strategy and team work, as well as executing your moves with precision. And if you think about it, that's pretty impressive."

Power Plays

- When switching control from one player to another, don't click on a defenseman skating backwards. Since you can only make a player skate forward, he'll lose his momentum turning around and will be taken off the play.
- If you're controlling a player with excellent skating and checking abilities, you can usually take the puck away from an opponent just by skating near him. (This maneuver also depends on the opponent's puck-handling abilities.)
- In coaching mode, when killing a penalty use a less aggressive style of play (ALT/F1–F3). If you get too aggressive, you'll end up shorthanded by two.
- Also, when you're acting as coach closely watch your current line's strength. When a line's strength gets down to about 65, it's time to make a change.
- If you're losing by a wide margin and don't mind cheating, pull the other team's goalie and fire away. It may not be fair, but it sure is gratifying.
- Just for fun, shoot on your own goalie. He won't be expecting it, and you're likely to score. The *opposing* team will embrace you, and the spectators cheer as wildly as if you just made an end-to-end rush on your opponent's goal. (The only problem is you won't be credited for the goal.)

Continued from page 42

that with *Professional Page*—a $395 program. I have heard some people say *geoPublish* tends to crash if you push it to its limits like too many open text documents of the 16-page limit. But if you consider what the program is doing on the 64, it's doing backflips and contortions.

MJ: How are you presently using your computers?

PH: We still do some laser printing work for ourselves and other people, mainly with *geoPublish.*

MJ: Is this a business?

PH: It's a hobby. We just want to help people out.

MJ: Since you mentioned laser printing, what's the deal with using a laser printer with GEOS? Can a laser printer do an exact duplicate of dot matrix printing, only better?

PH: If you use fonts that aren't laser fonts, it just prints dot matrix. It looks nice and black, with no line-feed skips that you sometimes get with dot matrix printers, and a laser printer will give you sharper dots. But it's still just very sharp dot printing. That's why they give you the LW fonts. They print out typeset quality. [*See this month's Pumping GEOS document.*]

Another thing, laser-printing with GEOS only really works with a PostScript-compatible printer. With an HP or any other type, it just looks like dot matrix.

MJ: Time for a topic change: How do you stay abreast of the industry?

PH: There are three things we do. One, we frequent a computer store. We go in once a week, usually on a Friday and spend a couple hours helping whoever happens to come in with questions on GEOS and so forth. The store always directs people to us. Two, we go to user groups, show off new products, new utilities, help with problems, etc. And three, we've frequented all the major computer fairs and shows—Commodore ones—for the last couple of years.

MJ: Which ones?

PH: We went to the World of Commodore in Toronto and Philadelphia the past two or three years. We went to all the local computer fairs. And we went to CES in Las Vegas last year and this year.

MJ: Wow! You guys mean business.

PH: Yes. We went to CES last year and helped out at the Berkeley booth.

MJ: How?

PH: While the Berkeley guy was preparing for his seminars, we'd answer people's questions. Like people would say, "I want a printer driver, and I can't get this to work." So we'd help them. We did a lot of this at World of Commodore in Toronto this past December. Of the four days there, we spent about four hours each day at the Berkeley booth answering every question anybody would ask us.

MJ: Did you do this gratis?

PH: We did it gratis, but they gave us some software for helping. We really enjoyed it because a lot of people had problems which we were able to help with because we've been using GEOS since the beginning. We were even beta testers.

MJ: How did you get that role?

PH: When Berkeley first came out with their ads (but before GEOS was ready) we used to call up every day and say things like, "Does it really do scrolling from side to side?" and "Can you scroll around the whole page?" and we'd bug them and say "When are you going to ship it out?"

It finally came out. Well, we belong to about 15 user groups, so I told Berkeley I'd like to show it off. They were going to give me one copy to keep for about two weeks. Then somehow, someone at the top got a little worried about who this Paul Hughes guy was. They wanted me to send them a letter that had the names of all the user groups and the addresses and the contact people and when I planned to go to them, so they would know I was a legimitate person. So I sent in all that information and after the two weeks they said, "Just forget about it, keep it."

The product was quite buggy as version 1.0. We developed an art of diverting people's attention whenever the thing blew up during a demonstration. We'd have people looking across the other side of the room while we were fixing things. Of course, we discovered all these bugs and problems the more we used GEOS and we would report them to Berkeley. As a result, Berkeley got to trust us. They knew that we liked the product a lot, that we were working for them, getting computer stores to order it, etc. So they asked us, "How'd you like to be beta testers?" We said, "Sure. We thought you'd never ask."

MJ: During this two-week stint, how far did you travel in your evangelical work?

PH: Oh, I don't know, a couple hundred miles. We went to two groups in Maine in one day (about 60 miles apart) and all the way down to Rhode Island. We paid our own gas, etc. Sometimes a user group would buy us dinner or something like that. We just wanted to get the word out.

MJ: Describe the process of beta testing for our readers.

PH: The way we beta test is, for starters, to skip reading the manual. Sometimes they don't even give you a manual. We just do trial and error. My brother and I just like to click every button, pull down every menu, do every combination and variation to try to get the thing to blow up. Then we go back and read the manual to see how to do it the proper way.

MJ: Have you beta tested anything besides GEOS?

PH: We did some with *Flexidraw.*

MJ: How much do you still use GEOS yourself?

PH: We use it a couple of hours every day. Just simple file manipulations, writing little letters.

MJ: Do you use *geoWrite* before other word processors?

PH: No, sometimes we do, but usually we use [Busy Bee Software's] *The Write Stuff* or [Digital Solutions'] *Pocket Writer* and then use the Text Grabber to convert it so we can use the fonts.

MJ: How about *geoCalc, geoFile?*

PH: We did use *geoFile* for a while for a user group members list, but then people kept saying that that version I was using was buggy . . . I didn't find any, but I also didn't want to trust it anymore. We don't use *geoCalc* too much; we usually use *Pocket Planner.*

MJ: I know you two are avid Q-Link users. What's the value of Q-Link for GEOS users?

PH: It's incredible. Q-Link is like this national user group; every night you go on and there's always someone to talk GEOS with. GEOS has a large area called the GEOS Arena which is probably the most active.

MJ: How active? How many people are using it?

PH: The message boards are very active. There are not only several message boards dedicated to 64 and 128 support, but also there are individual message boards for each of Berkeley's software packages. In terms of the activity, what happens is that, say that you post a message tonight. By tomorrow morning there will be ten or so posted beyond yours. Within like five or six days the board has rolled over and your message is gone.

There are several very experienced GEOS users on-line who help people a lot: Francis Kostella, Joseph Buckley, Ken Slaughter, George Wells, Susan Lamb, Marshall Kragen, and us. This core group of people answers and responds to almost every message. Berkeley only gets on every couple of days. They prefer users to get answers from the public board. This helps

out more people more quickly. One of the reasons is that a lot of people ask the same questions, so the public response speeds things up.

MJ: What are some of the main questions?

PH: Installing their software—they clicked No when they meant Yes—and now they can't use any of their previous applications.

MJ: How about other sources of information for the GEOS user? Recommend for my readers the best way to spend their money on GEOS products and support.

PH: One of the best things is to get the *geoWorld* subscription. It's the definitive magazine on GEOS. We've been writing for it for about two years since it first came out. And most of the magazines supporting the 64 now have a GEOS column.

MJ: And we all know which one is the best. How about books?

PH: Most of the GEOS books are lousy, and they're all geared toward beginners. The best thing is the GEOS 2.0 manual: it's profusely illustrated, and they explain everything. User groups are also good places for beginners to get help. We probably go to a user group at least once a week.

MJ: Are the people out there that you mentioned doing these things mostly for profit, or is it a labor of love like yourselves?

PH: Mostly, for fun. For us, it's mostly just a hobby. Of course, we wouldn't object if anybody paid us for it. Lots of them do make a little money selling articles and programs to magazines, selling clip art, and so forth.

MJ: Anything great coming in the GEOS world?

PH: In the past few months, people are starting to come out of the woodwork with programs.

MJ: Any closing comments?

PH: Someone said in an article about GEOS one time that Brian Dougherty saved the 64, and it is true in a way—it kind of brought it back to life.

MJ: Good point. Maybe I'll work that into my introduction to this article.

You'll notice this month's Pumping GEOS document is a laser-printer copy courtesy of Peter and Paul. I also gave them the liberty to do the layout. I'd like to publicly thank both Peter and Paul Hughes for helping make this article a fun task, for keeping me up to date on GEO-developments, and for pumping a few extra breaths of life into GEOS. ■

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trols the length between frames.

The system itself is a snap to learn. With a minimal amount of practice you will be able to glance at a frame box and know what it contains. Simple commands allow you to re-enter frames to move or change graphics and text.

The graphics themselves are of the highest quality, finely detailed and imaginative. Although there is no real animation per se, creative use of available special effects opens many exciting possibilities.

At the top of the screen are four pull-down video tool menus: Frame Tools, Strip Tools, Movie Tools and Program Tools. Each menu offers a wide variety of control options for each segment of production.

The Frame Tools menu allows users to preview and manipulate individual frames. Here you can reposition or resize frames and set background colors. Editing commands also allow you to cut, copy, paste or insert frames within a strip.

Two or more frames in a sequence comprise a strip. The Strip Tools menu offers a three-speed preview mode (fast, slow and normal). DOS commands allow you to save, load or delete strips from your data disk. Finally, a Play option makes it possible to record a single strip to videotape. After queuing your tape, a five-second audio countdown signals when to release the VCR's pause control.

Linking two or more strips together creates a "movie." The Movie Tools menu allows you to preview or play a movie (using the same procedure described above). Likewise, movie files can be saved, loaded or deleted from your data disk. The List Movie command reveals the individual strips that make up the current movie. From this list more strips can be added or removed. Finally, movies can be set to repeat a set number of times or play "forever."

The Program Tools menu simply offers dual drive users the opportunity to select their data drive (usually device 9).

With any productivity program, imagination is the key to creativity. For those less visually inspired, however, the authors include many helpful tips and tricks. Most involve getting the most from the program's special effects, while others deal directly with the mechanics of recording onto videotape.

Home Video Producer is a masterful tribute to the potential of personal computers to interface with yet another aspect of our lives. ■

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clear step-by-step instructions, glossary and trouble-shooting section. The small size of the manual means that users can quickly get to the controls of the program and begin work. But this brevity has a down side as well. There are some features

> *Fantavision* lets you choose and load a sound effect into memory by simply pointing and clicking on a sound file.

(like bit-mapped images, sound memory limitations, zooming, etc.) about which I would have preferred more information than is supplied. I also wish an index were included. Apparently, because the program is so easy to use, the developers felt the user wouldn't require more information, but I would prefer a less abridged manual.

Fantavision is not copy protected and can be installed on a hard drive. In my opinion, dollar for dollar, this is the most delightful, easy-to-use, yet powerful animation program released to date. ■

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[1988] Christmas sales suggest that certain 64 titles sold better than their IBM counterparts. I believe there's at least another year left for the old 64, and our products fit into that time line rather nicely.

I see the Amiga as a reality now. It's an incredible microcomputer and the closest thing to having an arcade machine in the home. Our programmers would love to support the Amiga right now, but Data East will have to make that decision for us. *[Editor's Note: Data East has announced that at least some of their product line will be made available for the Amiga.]*

We've also reached a point where developers should be looking toward the future, as they push existing hardware to its limit. I've seen some VCR gaming products on the market, but they seem to be short-term items. CDI (compact disc interactive) and other forms of video technology are just beginning to emerge. These are the areas I'm excited about for the future.

Scorpion Software

Over the years, I've interviewed outstanding software people around the country. One of them is Clement Chambers, president of CRL (an affiliated label of Scorpion Software). In case you haven't heard of CRL, it's a British software development group that is out to make a name for itself in America. I think they have a good chance of doing just that.

Jermaine: Is CRL really developing a new type of Amiga program?

Chambers: You must be talking about *Rumble.* The Germans think I'm calling it "Rambo" on the phone, but the name is actually *Rumble.* The program is not a computer game in the traditional sense of the word. It's a hyper-media product. This means the program can be used in a number of different ways.

We've been researching CDI and other new technologies for the last three years. The trouble with all of these interesting ideas is the fact that there's no hardware out there to do anything with them. So we decided to create similar things on the Amiga until CDI and other concepts become practical. In fact, we're currently developing a number of four- or five-disk packages for the system.

Getting back to *Rumble,* it's four computer games rolled into one. Whenever two guys in the program meet, all hell breaks loose. First of all, you're fighting with your foe for a parachute (as you both fall 17,000 feet from a plane). The chute automatically opens at a thousand feet, declaring a winner in this smack-and-grab contest.

In another challenge, the user takes a trip down Zombie Alley. Armed with a flame thrower, you must destroy the living dead as they come up from the ground, walk through picket fences, etc.

Then we have the cable car fight. Our two adversaries can go inside the car or on top of it, as they attempt to throw their enemy from the vehicle. It's basically an old-fashioned bare-knuckles fight, where no weapons come into play.

The fourth and final game is a bar room brawl. John Wayne would have been proud of this exciting scenario. Players can pick up chairs and hit guys over head with them, or crack someone's skull with a beer bottle. You can also swing from the chandelier as you fight your way down the bar.

> "*Hyper-media* is a hard term to define. You're not buying an album, you're not buying a computer game, and you're not buying a movie."
> —*Chambers*

I like this type of program because it's basically a non-violent program. Although fighting takes place between the people in the game, you never see someone's head blown off or a body beaten to a bloody pulp. Our work resembles the type of violence you see in the average Road Runner cartoon. Rumble is truly an exciting product, that should be on the market later this spring.

Jermaine: Tell me more about this hyper-media concept.

Chambers: *Hyper-media* is a hard term to define. You're not buying an album, you're not buying a computer game, and you're not buying a movie. The user is purchasing an entertainment package that gives him all of these things. In *Rumble,* for example, you can play one piece of music indefinitely, or program songs like you would on a CD player. There are 16 different original tunes in the package. They range from underground disco and *Miami Vice*-type music to songs that might appear on a movie soundtrack album. Some of this music also contains vocals performed by members of our software development team.

Then you have the computer game itself. It's a fast action arcade game that challenges you to make split second decisions. Up to four players can compete in these events at one time. The movie option is unique.

Rumble will probably be a better game than it is a movie, but it won't necessarily be a bad film. Let's face it. You're not purchasing a copy of *Ben Hur* starring Charlton Heston. The consumer gets a nice medium-length cartoon, running from 25 minutes to approximately two hours (depending on how you set things up). Users can also activate the music option and play it like a movie soundtrack. People don't want computer games per say. They want to be entertained. We believe in the hyper-media concept, which is setting the stage for bigger and better things.

Jermaine: Can you tell me more about your upcoming Amiga projects?

Chambers: During the May/June time frame, *Journey to the Center of the Earth* will be available in a store near you. The program is based on the classic Jules Verne novel (not the film of the same title). In the game, you're descending into the depths of the earth to rescue the daughter of a famous explorer. Everything takes place in a 3D environment and part of the route down is different from the route back. In other words, you can go down a thousand-foot cliff a lot easier than you can climb up it. You will also discover blocked passageways, underground seas, dangerous creatures and mind-boggling labyrinths. As I said before, we're sticking pretty close to the storyline of the book, so some of you know what to expect in the game.

International Athletics will be coming your way early this summer. The program is a good simulation of Summer Olympic competition, featuring highlights of events, action replays, etc. Players can participate in the following contests: shot put, javelin, discus, long jump, high jump and various running events. We have 12 people working on the game, and I'm sure it will be well received.

An untitled program is also in the works. This product is based on a classic sci-fi movie, but the leading lady didn't want to appear in the game. She doesn't want to be reminded of the film, so we had to re-write a portion of the program. I think you'll enjoy this semi-adult shoot-'em-up arcade game.

Rocky Horror Picture Show is another incredible Amiga project. The program has done very well on the 64. We're taking the basic concept, porting it over to the 16-bit environment and making it a hyper-media product at the same time. The final program should be absolutely fantastic. ■

Software Reviews/Chop 'n Drop

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In solitaire games, the object is to stay alive by ending each round in first or second place. The challenge grows with each successive round, as the computer players increase their skills and respond with new strategies.

In two-player games, if one drops out, the other fights on against two computer opponents. Likewise, if the computer character is eliminated, the two humans face each other head-to-head.

Every two rounds endured by the player result in a bonus opportunity. Here, players stand in the middle of the screen holding a small shield. The object is to deflect bouncing balls coming at you from both sides. As more balls are deflected, the pace quickens. To survive the entire round—and win an extra 5,000 points—players must often deflect low balls while ducking under high ones. It's a challenging test of timing and reflexes.

The strategy necessary to advance to higher levels requires a certain "selective aggression." Although it's fine to take the lead and pummel your way to the top, sometimes the other players just won't cooperate. Be careful: By ignoring you, the two of them can trade off enough punches to win the round and knock you out of the game.

If you see the other players monopolizing the action, single out the leader and attempt to keep him down. The challenge is to keep him from winning the round before you have the chance to at least tie the third player on combat points. With time running out, the action easily becomes absolutely frantic.

The fighters' animation is faultless, especially when viewed against the stunning Amiga-like background. The sound effects also add a great deal to the action. Punches land with a satisfying thud, often accompanied by a sharp grunt from the victim. This game is great for letting off steam after a long hard day.

As promised, the game features a few "Easter eggs"—graphic surprises when you press certain keys. Press the asterisk key for a subtle change in scenery. Press the "S" and "E" keys together for a real eye-popper. Use this trick for a quick advantage during two-player games. You may only get away with it once, but the laughs are worth it.

There are certainly more complex martial arts games on the market, but *Chop 'n Drop* takes top prize for attention to detail. Its graphics, off-beat humor and realistic action just can't be beat. ■

Software Reviews/Modem Wars

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your enemy from seizing victory by surprising your troops and destroying your own Comcen. If your headquarters comes under attack, you'll have to manually repair any damaged parts and escape or destroy the enemy quickly, or defeat is certain. Once your Comcen is located by the enemy, you can be sure every available enemy unit will head directly for it—so the smart move is to retreat. On the other hand, a daring commander might draw his opponent into a trap by revealing the location of his Comcen. But be forewarned—daring commanders are often dead commanders before the end of a scenario.

My single complaint with the game is that all the action is performed in real time. When you are competing against another human, the game's quick action is not penalizing. But when you play the computer, you'll instantly learn that silicon chips can make dozens of decisions and issue multiple commands while you are still trying to center the cursor over a unit. I would prefer it if the game had an option to play the computer in cycles (it moves then I move, etc.) rather than nonstop combat.

The program disk is not copy protected, so you can easily make a backup copy. But before you can go into combat, you must satisfy the game's manual-based protection scheme. I both like and dislike this solution to piracy. I'm glad Electronic Arts is beginning to give customers an easy, legal way to back up their software purchases, but I would have preferred a less annoying route. Before you can get into battle you must match a map on screen with its clone in the user's manual. Because the page on which the security map is located is not listed, you must search through 31 pages of the manual to find the match. I don't mind manual-based protection schemes—if they're not *too* time consuming. Of course, after you've booted *Modem Wars* a couple of dozen times you may be able to distinguish battlefield "E/PTP" from "JU-YN" relying on memory alone.

The game can be configured to work with almost any modem setup including everything from the 1600 VICModem, up to the 1670 1200-baud modem, as well as any Hayes-compatible modems. Despite its easy-to-master command structure, *Modem Wars* is not an easy game. If you love fast action with lots of options wrapped around strategy and deception, you'll like this one. ■

Technology/Introduction to MS DOS

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mercial but also public domain and shareware programs for MS DOS is astounding by virtue of sheer volume—there is definitely something for everyone in the MS-DOS world.

Next time, I will be covering command differences between 64/128 BASIC, Commodore 128 CP/M and MS DOS. Till then, I hope you enjoyed our first foray into the world of MS DOS, and I look forward to our next encounter.

Larry Greenberg is an independent computer consultant in New York and specializes in MS-DOS computer applications. He has either owned or used every Commodore computer since the PET 4032 back in 1979, and has been involved with MS-DOS since 1982. He owns several computers, including a Commodore 128D and a PC10-II, and was a founding member of the West Long Island Commodore Computer User Group.

Larry is very active in the telecommunications world, and can be found on Q-Link as SYSOP LG, heading the PC/MS-DOS Support Group (located in Commodore Information Network), and on PC LINK as PC Larry, heading the Business/Productivity Software Forum. ■

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I used this technique on Epyx's *Jumpman*, and now I regularly play it from a 1581 drive set up as device 9!
Kurt Tappe
Malvern, PA

64 Machine-Language Load from BASIC: Here's a neat little way to load machine language from within a BASIC program. As most programmers quickly learn, a program mode LOAD "filename",8,1 causes re-execution of the BASIC program after "filename" has been loaded. This method sidesteps that effect.

The method is also useful when compiling programs that load machine language. The *Blitz!* compiler, for example, gets stuck when loading machine language in the usual way.

The lines, of course, can be inserted anywhere in your program. After the load, execution will continue with the next statement after the SYS 62631.

128 owners, of course, can use the BLOAD command instead of a program like this one.
David Bianco
Chesapeake, VA

```
20 POKE 147,0:REM SET LOAD FLAG
30 SYS 57812 "FILENAME",8,1
   :REM SET PARAMETERS FOR LOAD
40 SYS 62631:REM LOAD IT!
```

CP/M HELP: Within the 128's CP/M operating system there resides a nice utility called HELP. It's a very worthwhile tool, but beginners sometimes find it difficult to use.

You can access the HELP utility by pressing the HELP key at the top of the 128's keyboard. You can then enter a particular subject and press RETURN, or simply press RETURN to get a list of all possible HELP subjects. HELP HELP brings forth the help file for the HELP utility itself.

Once a subject has been chosen, a list of further HELP subjects will be displayed. To choose one, just type its name and press RETURN.

If you already know your subject and its subheadings, you can string them all together with periods in between and go straight to the section you want. For example:

HELP.DIR.ATTRIBUTES.EXAMPLES

will display the subheading for the directory help file, or basically a list of examples.
Kevin Demers
Southern Maine Commodore Group

Amiga Mouse Substitute: Since it's almost impossible to operate an Amiga without a mouse, I used this little trick when my mouse was being repaired. You can move the cursor around by pressing the cursor keys in conjunction with either of the AMIGA keys. Also, if you press and hold either of the AMIGA keys you can use the left ALT key as the left mouse button and the right ALT key as the right mouse button.
Mike Killewald
Address Unknown

Improved Screen Capture: Occasionally a screen message or graphic will fly past so quickly that you cannot see it. When I want to look more closely at such messages, I connect the computer to my VCR and record the session. When I play back the tape, I use the VCR's Pause button to freeze the frame of the mystery message. Then I can look at it at my leisure.
Dickson Cho
St. Stephen, New Brunswick
Canada

Better 128D Cartridge Port Access: Like many other computer owners, my system sits on a desk against the wall, making it impossible to access the cartridge port in the rear. After searching for a cable that would come out of the port and let me plug in a cartridge, I found one at Briwall for only $17.95. This hard-to-find item was a lifesaver for me. You can find Briwall's address and telephone number in their ads in *Commodore Magazine.*
Brian Alan Peaceman
Philadelphia, PA

Joystick Autofire Trap: Have you ever turned on your computer and found it printing random characters without anyone touching the keyboard? Or have you found it printing a Q when you press O, or even replying with PRESS PLAY ON TAPE when you hit an N?

If you get problems like these and you have an automatic firebutton on your joystick, the autofire is probably ON and is causing all the problems. Turn it OFF and everything will be all right.

Here are some specific problems that can be caused by an automatic firing joystick:

- In Port 1, it causes continuous printing of certain characters.
- In Port 2, it alters several of the key assignments.
- When loading programs from tape, it may cause incorrect data transmission. You'll avoid all these problems by keeping the autofire switched OFF, or by keeping the joystick unplugged when not in use.

[In his letter, Mr. Meado admired my binary box number, and invited attention to his own. Like the loyal Commodore user that he is, he gets his mail at Box 6510. (The 64's microprocessor chip is a model 6510.)—LFS]
Waheed Meado
Aleppo, Syria

Troubleshooting Modems: If you've tried everything and your modem still doesn't work, unplug the modem and clean off all the connections, including those in the user port. A user port can get pretty dirty if nothing has been plugged into it for a while, even if you use a dust cover. In my own case, my 1660 refused to dial until I cleaned the connectors.
Dan Montroy
Ellis Grove, IL

Driving Safety Showoff Tip: Here's a real shorty that I use when friends visit. Load the program, then type the word RUN but do not press the RETURN key.

Instruct your friends to press RETURN, then to press the STOP key with the same finger. The finger will have to move about ten inches, or about as far as an automobile driver's foot has to move from the accelerator to the brake. The readout is the distance the car would move at 60 miles per hour during the time between hitting RETURN and STOP. Note that this is human reaction time, not total stopping distance.

The program is a good way to remind your friends to take it

easy on the way home. Try it at the start of the evening and after a few drinks, and compare the two readings.

Howard M. Schmies
Novelty, OH

```
10 REM DRIVING SAFETY
20 TI$="000000"
30 PRINT 1.5*TI,"FEET"
40 GOTO 30
```

Laser Sound: Since a laser is a visual device, it doesn't make any sound. Nevertheless, laser guns in TV, movies and game software always make some noise. This sound effect program for the 64 or 128 makes a nice laser-like sound. Like all well-behaved lasers, it starts off quietly and builds to a fevered pitch.

Randy Smith
Morrilton, AR

```
4990 REM LASER SOUND - RANDY SMITH
5000 FOR L=54272 TO 54295:POKE L,0
     :NEXT
5010 POKE 54277,8:POKE 54278,255
5020 POKE 54276,21:POKE 54287,10
5030 FOR H=1 TO 15:POKE 54296,H
5040 FOR F=128 TO 0 STEP-6
     :POKE 54273,F:NEXT
5050 FOR F=0 TO 128 STEP 6
     :POKE 54273,F:NEXT
5060 NEXT H
5070 POKE 54278,15:REM STOPS SOUND
5080 POKE 54296,0
```

64 Horse Race: Here's a nicely animated three-horse race that could be expanded into a game with betting, a tote board and maybe even more horses. Notice the movement of the horses' and jockeys' heads as they run together toward the finish line.

Bob & David Snader
Baltimore, MD

```
10 PRINT"[CLEAR,RVS,PURPLE,SPACE6]
   64 HORSE RACE - THE SNADERS[SPACE7]
   "
15 PRINT" HORSES: [BLACK]1 [WHITE]2
   [BROWN]3[YELLOW]":V=53248:S=54296
   :J=RND(-TI)
20 FOR J=0 TO 11:READ K,L:POKE V+K,L
   :NEXT
25 FOR J=832 TO 876:READ K,L:POKE J,K
   :POKE J+64,L:NEXT
30 FOR J=0 TO 3:READ T$(J):NEXT
35 FOR J=2040 TO 2044:B=14+(B=14)
   :POKE J,B:NEXT
40 R=INT(RND(TI)*3)*2:POKE 214,12
   :PRINT:P=PEEK(V+R)+5
45 IF P>240 THEN PRINT"[PURPLE,HOME,
   DOWN4] NO.[WHITE]";:PRINT(R/2)+1;
   :PRINT"[PURPLE]WINS[DOWN10]":END
50 FOR J=0 TO 3:K=J*5:POKE S,K
   :POKE S,0:FOR L=0 TO 9:PRINT T$(J);
   :NEXT L
55 PRINT "[UP,LEFT]":NEXT J
60 POKE V+R,P:GOTO 35
61 DATA 000,060,001,178,002,060,003,165
62 DATA 004,060,005,152,021,007,032,
   014
63 DATA 033,015,039,000,040,001,041,
   009
64 DATA 000,000,002,001,000,000,000,
   000
65 DATA 007,003,128,192,000,000,007,
   003
66 DATA 000,128,000,000,014,014,032,
   016
67 DATA 048,048,031,031,248,188,121,
   249
68 DATA 190,190,254,127,135,007,255,
   255
69 DATA 254,255,015,015,255,255,192,
   224
70 DATA 015,015,255,255,192,192,007,
   007
71 DATA 255,255,128,128,015,015,059,
   059
72 DATA 192,192,018,012,001,003,096,
   032
73 DATA 011,026,129,000,032,192,004,
   033
74 DATA 074,001,192,064,002,064,004,
   000
75 DATA 000,032,"[CMDR Y3,SHFT P]","
   [CMDR Y2,SHFT P,CMDR Y]","[CMDR Y,
   SHFT P,CMDR Y2]","[SHFT P,CMDR Y3]"
```

Saving Money on Printed Matter: You don't have to *own* a book to read it. Progressive public libraries have an up-to-date collection of computer books and subscriptions to at least a few computer magazines. If you don't find what you want on the shelves, ask one of the reference librarians.

If the library doesn't have what you're interested in, be sure to let the librarian know about it. She'll appreciate your advice, and if you convince her of the benefits to her patrons, she may even purchase the specific items you're looking for.

Many user groups also have lending libraries of books and magazines. Back issues of magazines are often given away at the meetings.

And don't forget your local book store. If you're polite and don't abuse the privilege, most book store managers will let you read to your heart's content. By thoroughly browsing the computer section, you'll learn which books and magazines are of most interest to you, and which would be a waste of hard-earned cash.

Mary Lee Resnick
Butler, PA

Classified Ads Save Money: Many newspapers have a classified advertising category for computer equipment. In the Pittsburgh Press, for example, classification 483A is Personal Computers, Games & Accessories. On a typical weekday, it has 15-20 computer ads, almost always including secondhand Commodore equipment.

Timmy Jacobs
Pittsburgh, PA

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less expensive, but also has fewer levels). I can't identify what makes it addictive, but once experienced it is hard to go very long without trying it again.

Earl Weaver Baseball: What can I say? This is total baseball. It has every feature a hardball nut could want: real-time action, player trading, statistics, instant replays, famous ball players, sideline assistance (from Earl Weaver), league play and a chance to win the World Series. This is as close as you can get to professional baseball without marrying Pete Rose.

Emerald Mine: Too much has been written about this silly little game by others for me to try to break any new ground. It is a simple game of search, dodge and survive. There is no clear-cut reason why *Emerald Mine* is so addictive—its graphics aren't great, its sound effects are just so-so, and the game action is old hat. However, it is fun to try and try and try. Don't take my word for it, just ask anyone who has searched for emeralds.

Empire: Yes, this game has been around for a while. Yes, it was born on a computer far less powerful than the Amiga. Yes, I know the graphics don't do the Amiga justice. And, yes, I am ashamed to admit how much time I've spent playing it. It is one of the few games I can start at 6:00 p.m., miss dinner because of, miss curfew because of, finally save to disk at 2:00 a.m. only to reboot at 7:00 a.m. (after a quick breakfast) and enjoy right through lunch and dinner without losing the desire to continue.

One of my favorite board games was Risk, which lets you conquer the world by building armies and invading neighboring countries. *Empire* has all the appeal and addictive features of Risk and more. Not only can you explore and conquer dozens of worlds and compete against a friend or the computer (one or two computer opponents), but you can also design your own worlds to conquer. This one has everything I love in a strategy game: land, sea and air forces, a simple command structure, save options and hidden enemy forces. I love this game.

F/A-18 Interceptor: There are good flight simulators and bad flight simulators, and then there is *F/A-18 Interceptor*. This game creates the most realistic feel of flying I've ever experienced outside the fuselage of an airplane. You are not required to know every minute detail of fueling or controlling a jet to be able to soar with this simulator; it requires just enough to make it believable.

The visual and sound effects this game brings to the Amiga screen can't be described, they have to be experienced. Sometimes I enjoy just booting it up, turning off the room lights and experiencing the thrill of flying. While that is possible, the real fun of the game is qualifying for and then accepting dangerous missions in which you must intercept, out-manuever, out-shoot and out-smart enemy pilots while you conserve enough fuel to make it safely home.

I was going to suggest you eject from your plane at least once to enjoy the kick of bailing out at 5000 feet and landing in the Pacific, but on second thought, the enemy pilots usually take care of that little scenario whether you want the dunking or not.

Fire Power: In my opinion, this is the ultimate tank vs. tank game. The graphics and sound effects have to be experienced to be appreciated, and the almost never-ending challenge and battlefield will take hours (if not days) to complete. Each time the game is booted, a unique world is created in which you and a friend (or the computer) slug it out toe to toe. The game always changes, yet is always challenging. What I really appreciate is that once a structure is demolished it remains in place even when you leave the area, so you can use destroyed buildings or walls as reference points. I loved the game the first time I saw a demo, and nearly two years later I still get the same kick when I boot it.

GBA Championship Basketball: This game has been around for almost as long as the Amiga (longer if you count the 64 version), but I still love it. *[Editor's Note: This title is no longer in production.]* The game lets you coach and control a two-man basketball team while going toe to toe with either a human or computer-controlled opponent. The game is easy to control, but the challenge progressively increases as you (if you choose) battle your way through your division and then through the playoffs with the winners of three other divisions for a national championship. What makes the game unique is that you can divide control of the four players between yourself, the computer and another human. *GBA Championship Basketball* has plenty of challenge and staying power, and I have no intention of retiring this one just because it has aged some.

Gee Bee Air Rally: There is no way to explain the appeal of this game other than it makes me feel good. The flow of the planes in flight is simply plearurable. No, this is not a *great* flight simulator, but the plane you control does perform well within the limits of the game. Several elements make the game worth returning to: the multiple levels of difficulty and the surprising screens displayed whenever you progress to the next level, complete the final race or bail out. The game's controls are smooth, and the graphics are top notch. This one creates a natural high. *[Editor's Note: This title is no longer in production.]*

Gridiron: Without doubt, in the almost three years I've had this game, it has cost me more productive hours and supplied more entertaining moments than any one computer game I own. I am a football fan regardless of the season—autumn, winter, spring or summer—and this is the playing field I turn to when I feel the urge to bruise the old pigskin.

The game has four degrees of difficulty, including a practice mode. Because of my weeks of competition here, I now play only at the Pro level, a ranking with which I feel very comfortable. After being a disappointed Atlanta Falcons fan for years, I have found much solace here by successfully coaching my beloved red team past every adversary—a task no team in Atlanta's history has come close to matching. The reason I am addicted to *Gridiron* is simple—my Amiga is the only place on this earth where my team wins. *Gridiron* is my idea of what a football simulator should be.

Head Coach: Unlike *Gridiron,* this game keeps you on the sidelines sending in plays rather than letting you on the field to run with the ball. What the game lacks in graphics and animation, it makes up for with complexity and flexibility. With this game you can create or edit individual teams player by player; design and call complex play patterns (or call them from the field); substitute players into a game; compete on indoor or outdoor fields with varied weather conditions. But what brings realism to the game is that player injuries (just like in real games) can make the difference between a winning or losing team. The game also keeps vital stats (which can be dumped to a printer) on every team and player.

Hybris: I wasn't very excited about this imaginary space battle the first time I tried it, but after reading the documentation and checking out some of the options included, I was hooked. First of all the game is not unbeatable, but it helps if you memorize attack patterns of the bad guys. The graphics here are well done and constantly changing, making it fun just to see what comes next.

But what makes it so appealing is the ability to give your craft more than the default number of three lives as well as being able to continue a battle from where your last life ended rather than always having to return to the beginning as is required by most arcade games.

Mean 18: What can I say about this game? It has been around a long time, and although there have been numerous attempts by other programmers to surpass it, it remains the king of the golf courses. I do admit, however, that I despise the stupid little gopher which pops up when the game is first booted because it gives the false impression that this is some sort of kid's game, which it is not. *Mean 18,* in my opinion, is the best golf simulator on any system, period. And, yes, it is addictive.

A true story best illustrates just how addictive. Two out-of-town friends (both Sunday afternoon green hoppers) with their girlfriends, came to visit one Saturday. While the ladies visited, we retreated to my computer room and began a round of golf—three men and my seven-year-old son. At 1:00 a.m. Sunday we were still happily chipping our way around the greens. The fellows were so preoccupied with the game they had actually forgotten about their dates. They were so addicted to the game that when the women came to complain that it was time to go, they actually entertained thoughts of sending their dates home in one car, so they could enjoy the game a little longer. Since that night one couple has married and the other is closing in on the possibility. But you know, for some reason the ladies have never come to visit since then.

Obliterator: If you like the adventures of Psygnosis' *Barbarian* you'll like this action game even better. Using a command panel similar to that of the older game, you control a fighter as he explores and battles his way through a huge alien cruiser. This one employs the same great graphics and action that make all Psygnosis games so appealing.

What I like about *Obliterator* is that it is challenging, but it is not so difficult that you die immediately even as a novice. You can have plenty of fun and adventure here without being a master explorer. And I do get a kick out of seeing Drak (the fighter's screen name) do a realistic forward roll and come up shooting.

Pioneer Plague: This one requires lots of fast maneuvering and blasting as you try to save your planet from invading aliens. What makes this game stand out from some other alien shoot-'em-ups is that it uses great-looking, fast-scrolling HAM graphics. But beyond that, the game is more than a simple search-and-destroy mission. You have to program and employ drones, navigate the universe, refuel your ship and know when to use which weapon. The game is wonderfully complex and challenging.

Ports of Call: Maybe this game's appeal is rooted in my childhood love of board games. Close inspection reveals that *Ports of Call* is really just an enhanced multiple-player board game with some arcade options mixed in for good measure. But all that matters is whether the mixture works, and it does. While the concept could easily be converted into cardboard and dice, the actual displays used by the game look nothing at all like a flat board game.

As a would-be sea baron, you attempt to parlay your small holdings into a fortune by buying, shipping and selling products, raw materials and ships around the world. You can compete against the computer, yourself or other players. To give those with joystick twitch a chance to unlimber their wrists, there is also an option which lets you try your hand at maneuvering your ships into narrow harbors and docking them at assigned piers (if successful, you save some money—if not you lose). In the end, the combination of features produces an addictive game from a company which is better known for graphics and video applications.

Questron II: I've liked fantasy role-playing games for a long time, so it's not surprising that I got hooked on the Amiga version of SSI's *Questron*. The game has a good mix of options and challenges which makes it fun to return to again and again. While I enjoy fantasy games, I am far from being a master which may explain why I like this game so much. You can do a lot of traveling, exploring and fighting without getting knocked off immediately.

Road Raider: This game is a real kick. Its action is more arcade than anything else, but to succeed you have to be able to do more than just aim and shoot. The game is more or less an exercise in survival. You are placed behind the wheels of a super, fully-armed, all-terrain vehicle on a very hostile planet. To survive you must find and either take or buy the necessities of life—fuel and repairs for your ATV, and (of course) weapons and ammunition.

I found the real fun of the game was finding and taking supplies, but other players may like the challenge of blasting their way through the dangerous streets better. Regardless, the game is packed with a lot of entertainment.

Shanghai: This is one of the first games I got when I bought my first Amiga, and it is still addictive. In theory the game is simple: you just remove pairs of matching tiles until you have cleared the board. The trick is to remove the correct match in the correct sequence.

Again, the appeal of the game is twofold: it is visually appealing and while difficult, it is not unbeatable. The kick (and mild shock) I got when I first succeeded in uncovering the dragon's eye has not diminished with time. This game quietly lays around and entices new players similar to the way a half-finished jigsaw puzzle lures the curious. This game isn't new, but if you are hooked on your Amiga and haven't tried it yet, you are depriving yourself.

SideWinder: When I think of an arcade-quality game, I naturally think of *SideWinder.* It has wonderful graphics (crisp, well designed and pleasantly colored), realistic sound effects and true arcade speed. While the storyline here is as worn as last year's calendar (you must save the universe with your lone starfighter) the fun and challenge the game possesses is as fresh as tomorrow's milk delivery. As you fly and battle your way deeper and deeper through the defenses of the invading mother ship, the sound and graphic effects are enough to satisfy even the most demanding AAA (Amiga Arcade Addict). What I especially like is the realistic feeling the game presents. The starfighter feels and responds like I thought it should, the images and sound effects presented look and sound the way I thought they should, and just as importantly, the attacked installations didn't just disappear when they were hit—they showed damage instead. I don't fall in love with many arcade games, but this one is an exception.

Starglider II: I enjoyed the first version of this game, but was never able to survive long enough to master the fighter craft. That problem doesn't exist with this update—you can escape the bad guys by flying high above them, where you can master the craft's controls before dashing into battle. But this is not a single planet conflict, this one lets you not only battle on the home planet but also warp deep into space to save other planets in the universe.

But even without all that complexity, the game has great appeal. First its graphics, action and sound effects are topnotch. But beyond being just a good game, *Starglider II* is a good flight simulator, employing many of the viewing options and controls I like so much in *F/A-18 Interceptor.* And believe it or not, the game even has a paint option which lets you relax and unwind after an exhausting day of battle. The game has so many options, all so well done it would be impossible *not* to become addicted to it.

Superstar Ice Hockey: I haven't mastered this one yet, but it has all the kicks I like in a sports game: real-time speed, ability to control individual players while coaching the rest of the team, and the welcomed ability to choose difficulty levels. But what really makes this a game worth coming back to again and again is that once you master the game controls and develop a team you like (you can train or trade for a winning bench) you can coach/ play an entire season against 19 other teams, in four divisions, for up to nine seasons. While the game's complexity is comparable to action in a real game (including fights and penalties) the coaching interface requires no more effort than a twist of the wrist.

Faery Tale Adventure: I think I would have become addicted to this game if for no other reason than it unfolds in a beautifully-crafted, mystical world. Each turn of this fantasy game reveals more interesting details to enjoy with great sound effects and music to boot. Although the game pairs a good storyline with good action and beautiful graphics, what gets me coming back for more is the challenge the game presents and the satisfaction of uncovering clues, passing a new landmark or discovering the trick to defeating a determined foe. Best of all the game creates an exciting, yet beautiful world where I can escape to for an hour (or week) at a time.

Torch 2081: The name doesn't reveal much about this game. As is true of most games, this one shares some features of other games, but of all the games of comparable actions, I found only this one addictive. The premise is simple: You control a spacecraft protecting a world under attack by burning meteors. To win (and save your world) you must conquer the invading meteors (the torch in the title) by fencing them into a computer-dictated area. As you advance through dozens of screens you are required to limit the torch's activity to a smaller and smaller area, while at the same time the invaders become more aggressive. What makes this game so addictive is that it possesses that fine mixture of playability and frustration which makes you feel you can beat the odds if you try one more time. Let me testify from personal experience, that these "one more time" attempts can quickly consume an entire afternoon. To date I've yet to get beyond the seventeenth level, but I really believe I can do better, if I just try one more time.

Universal Military Simulator: To appreciate how anxious I was to try this simulator, you must understand how much I enjoy good strategy and war games. Actually, one of the reasons I got involved in computers in the first place was because of their ability to simulate or referee board games. I've enjoyed dozens of good war games on several systems, but none have matched the realism and possibilities of *U.M.S.* What makes this product so addictive is not that it simulates particular battles (it comes with five battles, and disks containing other battles can be purchased separately) but that you can create your own scenarios. This means you can recreate and fight armies from any age in history or create unique battle situations only you can imagine.

All of this is done using a three-dimensional battlefield with armies straight out of the pages of history, or those you create or edit. Once your battle is created, you can command the forces yourself, war with the computer or another person or allow the computer to act as general for both sides. Just as important, creating, editing and controlling both battlefields and armies can be done with intuitive mouse commands, making creating your own scenarios simple.

I don't think this is the best military simulator that will ever be created for the Amiga, but for now it is far and away the best. If I could have only one war game, this would be it. I'm willing to bet that all the missing features I would like to see in a simulator (roads, walls, water, the ability to have naval and flying forces) will be included in a future update. In its present form the "U" in *Universal Military Simulator* stands for universal, but with a few changes the "U" could easily stand for ultimate.

Virus: Navigating the three-dimensional world created in *Virus* makes this one so addictive. The game is simple—you find and destroy the bad guys and repair the damage that's been done to the world. The real fun and challenge here is mastering the controls of the attack craft you must fly.

The game has the most realistic, three-dimensional, scrolling playing field I've yet seen in any game on any system. If the game has a flaw it is its name—*Virus.* I'm sure some would-be players have avoided this one out of fear (will it infect my system?) or because they thought it was some sort of virus protection utility. The only thing this game will infect is the user.

Future Fixes

I'm sure the number of titles on my list will expand as new titles are released. For instance, just as I was finishing this article I received a copy of Cinemaware's *Rocket Ranger* and Spinnaker's *StarRay* which both triggered some addiction symptoms the first time I booted them—time will tell how addictive the flying Ranger's adventures really are and whether subsequent arcade levels will worsen my joystick twitch. The same week brought a review copy of Spectrum HoloByte's *Falcon.* It really looks addictive—maybe as good as *F/A-18 Interceptor.* And if Ed Fletcher's description of Bethesda Softworks' new *Wayne Gretzky Hockey* and soon-to-be-announced football simulation prove true, both will probably make my addiction list. *[Editor's Note: Gary's predictions are correct. Look for complete reviews of two new addictive simulations—* Falcon *and* Wayne Gretzky Hockey *elsewhere in this issue.]*

So you see, the floodgate holding addictive Amiga software is just beginning to open, and like a true addict, I quiver at the prospect of the thrills to be experienced in the future. If 1989 and 1990 produce the quality programs I think they will, my life-time membership in AA is assured.

Product Information

Accolade, Inc.
550 S. Winchester Blvd.
Suite 200
San Jose, CA 95128
(408) 985-1700
Mean 18 $44.95

Aegis Development, Inc.
2210 Wilshire Blvd.
Suite 277
Santa Monica, CA 90403
(213) 392-9972
Ports of Call $49.95

Antic Publishing
544 Second Street
San Francisco, CA 94107
(415) 957-0886
Pioneer Plague $39.95

Bethesda Softworks
15235 Shady Grove Rd.
Suite 100
Rockville, MD 20850
(301) 926-8300
Gridiron $59.95

Cinemaware Corporation
4165 Thousand Oaks Blvd.
Westlake Village, CA 91362
(805) 495-6515
Rocket Ranger $49.95

Constellation Software
17 St. Mary's Court
Brookline, MA 02146
(617) 731-8187
Emerald Mine $19.95
Crystal Hammer $19.95

Digital Concepts
43035 Hayes Road
Suite 229
Sterling Heights, MI 48078
(313) 772-1416
Torch 2081 $49.95

Discovery Software
163 Conduit Street
Annapolis, MD 21401
(301) 268-9877
Hybris $39.95
Better Dead Than Alien $34.95
Arkanoid $49.95

Electronic Arts
1820 Gateway Drive
San Mateo, CA 94404
(415) 571-7171
Earl Weaver Baseball $49.95
F/A-18 Interceptor $49.99
SideWinder (from Arcadia's *Awesome Arcade Action Pack Vol.1*) $49.99

Interplay Productions
1575 Corporate Drive
Costa Mesa, CA 92626
(714) 545-9001
Battle Chess $49.95

Interstel
P.O. Box 57825
Webster, TX 77598
(713) 486-4163
Empire $49.95

Mediagenic/Activision
3885 Bohannon Drive
Menlo Park, CA 94025
(415) 329-0500
$39.95
GBA Championship Basketball $44.95
Shanghai $39.95
Gee Bee Air Rally $39.95

MicroIllusions
17408 Chatsworth Street
Granada Hills, CA 91344
(818) 360-3715
Fire Power $24.95
Faery Tale Adventure $49.95

MicroSearch, Inc.
9896 Southwest Freeway
Houston, TX 77074
(713) 988-2818
Head Coach $59.95

Mindscape
3444 Dundee Road
Northbrook, IL 60062
(312) 480-7667
Captain Blood $49.95
Road Raider $49.95
Superstar Ice Hockey $49.95

Omnitrend Software
P.O. Box 733
West Simsbury, CT 06092
(203) 658-6917
Breach $39.95

Psygnosis Limited
c/o Computer Software Services
2150 Executive Drive
Addison, IL 60101
(312) 620-4444
Obliterator $39.95

Rainbird Software
P.O. Box 2227
Menlo Park, CA 94026
(415) 322-0412
Virus $29.95
Starglider II $44.95
Carrier Command $44.95
Universal Military Simulator $49.95

Spectrum HoloByte
2061 Challenger Drive
Alameda, CA 94501
(415) 522-3584
Falcon $49.95

Spinnaker/Logotron Recreation
One Kendall Square
Cambridge, MA 02139
(617) 494-1200
StarRay $29.95

Strategic Simulations, Inc.
1046 N. Rengstorff Ave.
Mountain View, CA 94043
(415) 964-1353
Questron II $49.95

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spotter plane and watch the battle as if it were a movie.

When your mission is over (one way or another, that is), an Awards Screen appears displaying a series of snapshots depicting events in your mission, and presenting you with appropriate decorative ribbons. If you've exhibited particular valor, you could be awarded medals ranging from the Purple Heart to the Congressional Medal of Honor.

Falcon is full of digitized sounds which make the simulation quite realistic. Communications from your mission crew appear in writing while "chatter" is heard over your radio. And of course, there's also "Bitchin' Betty," a sprite English lass who verbally cautions you at appropriate times—usually when a fatal crash is imminent.

One unique feature (which requires one megabyte of memory) is the Black Box, a cockpit flight recorder which captures the maneuvers of both the F-16 and the enemy in three separate graphics. You can play it back at any time to see where you went wrong (or right if you're good enough).

Another special feature (also requiring one meg) is your ability to play *Falcon* against another opponent using an Amiga, Atari ST or a Macintosh. While this mode works rather well when the two computers are linked directly with a null modem serial port cable, the telephone line option causes the game to play excruciatingly slow (because of the slow data transfer rate).

Another option is the Training Mode which lets you select any one of over a dozen standard combat maneuvers to practice and master. In this mode, you can watch a training plane ahead of you actually perform these tactics.

The manual is a 144-page well-illustrated, softbound book which completely describes every detail of the simulation and is organized to let "bit-chompers" jump right in and fly the aircraft. The program comes on two non-copy-protected diskettes, although a code wheel is required to play the game. While this type of protection beats copy-protected disks, I often found it difficult to match the screen icons with those on the printed decoder.

Unquestionably, *Falcon* is a truly realistic simulation which is exciting to play. And because of its varying skill levels, it has the ability to entertain and capture the imagination of both the Sunday flyer as well as the Top Gun.

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hit or when a wasp touches you, a small part of the letters in the title of the game appears over your monster's icon at the top of the screen. The more times you are successfully attacked, the more the word *Aaargh!* becomes visible. Punch up to get rid of the wasps and punch in the middle to crush the catapult.

The graphics in *Aaargh!* are most impressive. Without a doubt, the colorful cities and animation should be an example to all potential graphic artists and computer game developers. Each city depicts a different type of environment, from the Far East to the West. The cities are drawn so well that the background looks as if it is a painting instead of computer graphics. The animation is very fluid, and the colors really stand out and wake you up. I have seen great game ideas with boring graphics in the past, and I've quickly filed those games away. *Aaargh!* is the type of game that you return to again and again to get a higher score and to enjoy the scenery that shows off the power of the Amiga.

The graphics are complemented by excellent digitized sounds, from the monsters' screams of victory (that give the game its name) to the punches that knock down the cities. Listen carefully for the buzzing of the wasp—that may be the only way you'll know it's coming if you're busy with other things. If you have stereo speakers hooked up to your Amiga, turn up the volume and turn off the lights for a truly incredible gaming experience.

Now for some complaints. The fight sequence between monsters serves no real purpose in the game and should have been deleted. After getting the joystick into the correct position, you just wait for your opponent to knock himself out. This is no challenge. In addition to this complaint, I must question why there is no two-player option, so that two people can rush on the same screen to find the roc egg first and then fight over it again in the fight scene. This would give the fight scene some credence and offer a new dimension to the game—competition.

Needless to say, if you've read this far, you know that I love *Aaargh!*. It is one of the few games you can find for the Amiga (the numbers are quickly increasing) that should be in the arcades of the world. It's a shame that only Amiga owners can see *Aaargh!* (at this time). I think you'll agree after playing *Aaargh!*, it is software like this that makes me proud to be an Amigahead. Happy pulverizing!

The programs which appear in this magazine have been run, tested and checked for bugs and errors. After a program is tested, it is printed on a letter quality printer with some formatting changes. This listing is then photographed directly and printed in the magazine. Using this method ensures the most error-free program listings possible.

Whenever you see a word inside brackets, such as [DOWN], the word represents a keystroke or series of keystrokes on the keyboard. The word [DOWN] would be entered by pressing the cursor-down key. If multiple keystrokes are required, the number will directly follow the word. For example, [DOWN4] would mean to press the cursor-down key four times. If there are multiple words within one set of brackets, enter the keystrokes directly after one another. For example, [DOWN, RIGHT2] would mean to press the cursor-down key once and then the cursor-right key twice. Note: Do not enter the commas.

In addition to these graphic symbols, the keyboard graphics are all represented by a word and a letter. The word is either SHFT or CMD and represents the SHIFT key or the Commodore key. The letter is one of the letters on the keyboard. The combination [SHFT E] would be entered by holding down the SHIFT key and pressing the E. A number following the letter tells you how many times to type the letter. For example, [SHFT A4,CMD B3] would mean to hold the SHIFT key and press the A four times, then hold down the Commodore key and press the B three times.

The following chart tells you the keys to press for any word or words inside of brackets. Refer to this chart whenever you aren't sure what keys to press. The little graphic next to the keystrokes shows you what you will see on the screen.

SYNTAX ERROR

This is by far the most common error encountered while entering a program. Usually (sorry folks) this means that you have typed something incorrectly on the line the syntax error refers to. If you get the message "?Syntax Error Break In Line 270", type LIST 270 and press RETURN. This will list line 270 to the screen. Look for any non-obvious mistakes like a zero in place of an O or vice-versa. Check for semicolons and colons reversed and extra or missing parenthesis. All of these things will cause a syntax error.

There is only one time a syntax error will tell you the "wrong" line to look at. If the line the syntax error refers to has a function call (i.e., FN A(3)), the syntax error may be in the line that defines the function, rather than the line named in the error message. Look for a line near the beginning of the program (usually) that has DEF FN A(X) in it with an equation following it. Look for a typo in the equation part of this definition.

ILLEGAL QUANTITY ERROR

This is another common error message. This can also be caused by a typing error, but it is a little harder to find. Once again, list the line number that the error message refers to. There is probably a poke statement on this line. If there is, then the error is referring to what is trying to be poked. A number must be in the range of zero to 255 to be poke-able. For example, the statement POKE 1024,260 would produce an illegal quantity error because 260 is greater than 255.

Most often, the value being poked is a variable (A,X...). This error is telling you that this variable is out of range. If the variable is being read from data statements, then the problem is somewhere in the data statements. Check the data statements for missing commas or other typos.

If the variable is not coming from data statements, then the problem will be a little harder to find. Check each line that contains the variable for typing mistakes.

OUT OF DATA ERROR

This error message is always related to the data statements in a program. If this error occurs, it means that the program has run out of data items before it was supposed to. It is usually caused by a problem or typo in the data statements. Check first to see if you have left out a whole line of data. Next, check for missing commas between numbers. Reading data from a page of a magazine can be a strain on the brain, so use a ruler or a piece of paper or anything else to help you keep track of where you are as you enter the data.

OTHER PROBLEMS

It is important to remember that the 64 and the PET/CBM computers will only accept a line up to 80 characters long. The VIC 20 will accept a line up to 88 characters long. Sometimes you will find a line in a program that runs over this number of characters. This is not a mistake in the listing. Sometimes programmers get so carried away crunching programs that they use abbreviated commands to get more than 80 (or 88) characters on one line. You can enter these lines by abbreviating the commands when you enter the line. The abbreviations for BASIC commands are on pages 133-134 of the VIC 20 user guide and 130-131 of the Commodore 64 user's guide.

If you type a line that is longer than 80 (or 88) characters, the computer will act as if everything is ok, until you press RETURN. Then, a syntax error will be displayed (without a line number). Many people write that the computer gives them a syntax error when they type the line, or that the computer refuses to accept a line. Both of these problems are results of typing a line of more than 80 (or 88) characters.

"[HOME]" = UNSHIFTED CLR/ HOME
"[CLEAR]" = SHIFTED CLR/HOME
"[DOWN]" = CURSOR DOWN
"[UP]" = CURSOR UP
"[RIGHT]" = CURSOR RIGHT
"[LEFT]" = CURSOR LEFT
"[RVS]" = CONTROL 9
"[RVOFF]" = CONTROL 0
"[BLACK]" = CONTROL 1
"[WHITE]" = CONTROL 2
"[RED]" = CONTROL 3
"[CYAN]" = CONTROL 4
"[PURPLE]" = CONTROL 5
"[GREEN]" = CONTROL 6
"[BLUE]" = CONTROL 7
"[YELLOW]" = CONTROL 8
"[ORANGE]" = COMMODORE 1
"[BROWN]" = COMMODORE 2
"[L. RED]" = COMMODORE 3
"[GRAY1]" = COMMODORE 4
"[GRAY2]" = COMMODORE 5
"[L. GREEN]" = COMMODORE 6
"[L. BLUE]" = COMMODORE 7
"[GRAY3]" = COMMODORE 8
"[F1]" = F1
"[F2]" = F2
"[F3]" = F3
"[F4]" = F4
"[F5]" = F5
"[F6]" = F6
"[F7]" = F7
"[F8]" = F8
"[POUND]" = ENGLISH POUND
"[SHFT ^]" = PI SYMBOL
"[^]" = UP ARROW

GRAPHIC SYMBOLS WILL BE REPRESENTED AS EITHER THE LETTERS SHFT (SHIFT) AND A KEY ("[SHFT Q,SHFT J,SHFT D,SHFT S]") OR THE LETTERS CMDR (COMMODORE) AND A KEY ("[CMDR Q,CMDR G,COMDR Y,CMDR H]"). IF A SYMBOL IS REPEATED, THE NUMBER OF REPITITIONS WILL BE DIRECTLY AFTER THE KEY AND BEFORE THE COMMA ("[SPACE3,SHFT S4,CMDR M2]").

THE PROGRAM WON'T RUN!!

This is the hardest of problems to resolve; no error message is displayed, but the program just doesn't run. This can be caused by many small mistakes typing a program in. First check that the program was written for the computer you are using. Check to see if you have left out any lines of the program. Check each line of the program for typos or missing parts. Finally, press the RUN/STOP key while the program is "running". Write down the line the program broke at and try to follow the program backwards from this point, looking for problems.

IF ALL ELSE FAILS

You've come to the end of your rope. You can't get the program to run and you can't find any errors in your typing. What do you do? As always, we suggest that you try a local user group for help. In a group of even just a dozen members, someone is bound to have typed in the same program. The user group may also have the program on a library disk and be willing to make a copy for you.

If you do get a working copy, be sure to compare it to your own version so that you can learn from your errors and increase you understanding of programming.

If you live in the country, don't have a local user group, or you simply can't get any help, write to us. If you do write to us, include the following information about the program you are having problems with:

The name of the program
The issue of the magazine it was in
The computer you are using
Any error messages and the line numbers
Anything displayed on the screen
A printout of your listing (if possible)

All of this information is helpful in answering your questions about why a program doesn't work. A letter that simply states "I get an error in line 250 whenever I run the program" doesn't give us much to go on. Send your questions to:

Commodore Magazine
1200 Wilson Drive
West Chester, PA 19380
ATTN: Program Problem

Have fun with the programs!

HOW TO USE THE MAGAZINE ENTRY PROGRAMS

The Magazine Entry Programs on the next pages are two BASIC machine language programs that will assist you in entering the programs in this magazine correctly. There are versions for both the Commodore 64 and the Commodore 128. Once the program is in place, it works its magic without you having to do anything else. The program will not let you enter a line if there is a typing mistake on it, and better yet, it identifies the kind of error for you.

Getting Started

Type in the Magazine Entry Program carefully and save it as you go along (just in case). Once the whole program is typed in, save it again on tape or disk. Now RUN the program. The word POKING will appear on the top of the screen with a number. The number will increment from 49152 up to 49900 (4864-5545 on the 128) and just lets you know that the program is running. If everything is ok, the program will finish running and say DONE. Then type NEW. If there is a problem with the data statements, the program will tell you where to find the problem. Otherwise the program will say "mistake in data statements." Check to see if commas are missing, or if you have used periods instead of commas. Also check the individual data items.

Once the program has run, it is in memory ready to go. To activate the program type SYS49152 (SYS4864 on the 128), and press RETURN. You are now ready to enter the programs from the magazine. To disable the Entry Program, just type KILL [RETURN] on the 64 or SYS4867 on the 128.

The checksums for each line are the same for both the 64 and 128, so you can enter your 64 programs on the 128 if you'd like.

Typing the Programs

All the BASIC program listings in this magazine that are for the 64 or 128 have an apostrophe followed by four letters at the end of the line (e.g., 'ACDF). If you plan to use the Magazine Entry Program to enter your programs, the apostrophe and letters **should** be entered along with the rest of the line. This is a checksum that the Magazine Entry Program uses.

Enter the line and the letters at the end and then press RETURN, just as you normally would.

If the line is entered correctly, a bell is sounded and the line is entered into the computer's memory (without the characters at the end).

If a mistake was made while entering the line, a noise is sounded and an error message is displayed. Read the error message, then press any key to erase the message and correct the line.

IMPORTANT

If the Magazine Entry Program sees a mistake on a line, it **does not** enter that line into memory. This makes it impossible to enter a line incorrectly.

Error Messages and What They Mean

There are five error messages that the Magazine Entry Program uses. Here they are, along with what they mean and how to fix them.

NO CHECKSUM: This means that you forgot to enter the apostrophe and the four letters at the end of the line. Move the cursor to the end of the line you just typed and enter the checksum.

QUOTE: This means that you forgot (or added) a quote mark somewhere in the line. Check the line in the magazine and correct the quote.

KEYWORD: This means that you have either forgotten a command or spelled one of the BASIC keywords (GOTO, PRINT . .) incorrectly. Check the line in the magazine again and check your spelling.

OF CHARACTERS: This means that you have either entered extra characters or missed some characters. Check the line in the magazine again. This error message will also occur if you misspell a BASIC command, but create another keyword in doing so. For example, if you misspell PRINT as PRONT, the 64 sees the letter P and R, the BASIC keyword ON and then the letter T. Because it sees the keyword ON, it thinks you've got too many characters, instead of a simple misspelling. Check spelling of BASIC commands if you can't find anything else wrong.

UNIDENTIFIED: This means that you have either made a simple spelling error, you typed the wrong line number, or you typed the checksum incorrectly. Spelling errors could be the wrong number of spaces inside quotes, a variable spelled wrong, or a word misspelled. Check the line in the magazine again and correct the mistake.

The Magazine Entry Programs are available on disk, along with other programs in this magazine, for $9.95. To order, contact Loadstar at 1-800-831-2694.

```
10 PRINT"[CLEAR]POKING -";
20 P=49152 :REM $C000  (END AT
   49900/$C2EC)
30 READ A$:IF A$="END"THEN 110
40 L=ASC(MID$(A$,2,1))
50 H=ASC(MID$(A$,1,1))
60 L=L-48:IF L>9 THEN L=L-7
70 H=H-48:IF H>9 THEN H=H-7
80 PRINT"[HOME,RIGHT12]"P;
90 IF H>15 OR L>15 THEN PRINT
   :PRINT"DATA ERROR IN LINE";
   1000+INT((P-49152)/8):STOP
100 B=H*16+L:POKE P,B:T=T+B:P=P+1
    :GOTO 30
110 IF T<>86200 THEN PRINT
    :PRINT"MISTAKE IN DATA --> CHECK
    DATA STATEMENTS":END
120 PRINT"DONE":END
1000 DATA 4C,1F,C0,00,00,00,00,00
1001 DATA 00,00,00,00,00,0D,00,21
1002 DATA C1,27,C1,2F,C1,3F,C1,4C
1003 DATA C1,EA,EA,EA,4C,54,C0,A2
1004 DATA 05,BD,19,C0,95,73,CA,10
1005 DATA F8,60,60,A0,03,B9,00,02
1006 DATA D9,04,C1,D0,F5,88,10,F5
1007 DATA A0,05,B9,A2,E3,99,73,00
1008 DATA 88,10,F7,A9,00,8D,18,D4
1009 DATA 4C,EF,C0,E6,7A,D0,02,E6
1010 DATA 7B,4C,79,00,A5,9D,F0,F3
1011 DATA A5,7A,C9,FF,D0,ED,A5,7B
1012 DATA C9,01,D0,E7,20,2B,C0,AD
1013 DATA 00,02,20,74,C0,90,DC,A0
1014 DATA 00,4C,A9,C1,C9,30,30,06
1015 DATA C9,3A,10,02,38,60,18,60
1016 DATA C8,B1,7A,C9,20,D0,03,C8
1017 DATA D0,F7,B1,7A,60,18,C8,B1
1018 DATA 7A,F0,37,C9,22,F0,F5,6D
1019 DATA 03,C0,8D,03,C0,AD,04,C0
1020 DATA 69,00,8D,04,C0,4C,8E,C0
1021 DATA 18,6D,05,C0,8D,05,C0,90
1022 DATA 03,EE,06,C0,EE,09,C0,4C
1023 DATA CE,C1,18,6D,08,C0,8D,08
1024 DATA C0,90,03,EE,07,C0,EE,0A
1025 DATA C0,60,0A,A8,B9,0F,C0,85
1026 DATA FB,B9,10,C0,85,FC,A0,00
1027 DATA A9,12,20,D2,FF,B1,FB,F0
1028 DATA 06,20,D2,FF,C8,D0,F6,20
1029 DATA BC,C2,20,E4,FF,F0,FB,A0
1030 DATA 18,B9,08,C1,20,D2,FF,88
1031 DATA 10,F7,68,68,A9,00,8D,00
1032 DATA 02,4C,74,A4,4B,49,4C,4C
1033 DATA 91,91,0D,20,20,20,20,20
1034 DATA 20,20,20,20,20,20,20,20
1035 DATA 20,20,20,20,20,20,20,91
1036 DATA 0D,51,55,4F,54,45,00,4B
1037 DATA 45,59,57,4F,52,44,00,23
1038 DATA 20,4F,46,20,43,48,41,52
1039 DATA 41,43,54,45,52,53,00,55
1040 DATA 4E,49,44,45,4E,54,49,46
1041 DATA 49,45,44,00,4E,4F,20,43
1042 DATA 48,45,43,4B,53,55,4D,00
1043 DATA C8,B1,7A,D0,FB,84,FD,C0
1044 DATA 09,10,03,4C,84,C1,88,88
1045 DATA 88,88,88,B1,7A,C9,27,D0
1046 DATA 13,A9,00,91,7A,C8,A2,00
1047 DATA B1,7A,9D,3C,03,C8,E8,E0
1048 DATA 04,D0,F5,60,A9,04,4C,CA
1049 DATA C0,A0,00,B9,00,02,99,40
1050 DATA 03,F0,F0,C8,D0,F5,A0,00
1051 DATA B9,40,03,F0,E6,99,00,02
1052 DATA C8,D0,F5,20,96,C1,4C,12
1053 DATA C2,A0,09,A9,00,99,03,C0
1054 DATA 8D,3C,03,88,10,F7,A9,80
1055 DATA 85,02,A0,00,20,58,C1,20
1056 DATA 89,C1,20,ED,C1,E6,7A,E6
1057 DATA 7B,20,7C,A5,A0,00,20,80
1058 DATA C0,F0,D0,24,02,F0,06,4C
1059 DATA A8,C0,4C,CE,C1,C9,22,D0
1060 DATA 06,20,8D,C0,4C,CE,C1,20
1061 DATA BA,C0,4C,CE,C1,A0,00,B9
1062 DATA 00,02,20,74,C0,C8,90,0A
1063 DATA 18,6D,07,C0,8D,07,C0,4C
1064 DATA EF,C1,88,A2,00,B9,00,02
1065 DATA 9D,00,02,F0,04,E8,C8,D0
1066 DATA F4,60,18,AD,09,C0,69,41
1067 DATA 8D,09,C0,38,AD,0A,C0,E9
1068 DATA 19,90,06,8D,0A,C0,4C,1C
1069 DATA C2,AD,0A,C0,69,41,8D,0A
1070 DATA C0,AD,03,C0,6D,05,C0,48
1071 DATA AD,04,C0,6D,06,C0,8D,0C
1072 DATA C0,68,6D,08,C0,8D,0B,C0
1073 DATA AD,0C,C0,6D,07,C0,8D,0C
1074 DATA C0,38,E9,19,90,06,8D,0C
1075 DATA C0,4C,52,C2,AD,0C,C0,69
1076 DATA 41,8D,0C,C0,AD,0B,C0,E9
1077 DATA 19,90,06,8D,0B,C0,4C,67
1078 DATA C2,AD,0B,C0,69,41,8D,0B
1079 DATA C0,A0,01,AD,09,C0,CD,3C
1080 DATA 03,D0,20,C8,AD,0A,C0,CD
1081 DATA 3D,03,D0,17,C8,AD,0B,C0
1082 DATA CD,3E,03,D0,0E,AD,0C,C0
1083 DATA CD,3F,03,D0,06,20,CC,C2
1084 DATA 4C,4B,C0,98,48,68,4C,CA
1085 DATA C0,A9,20,8D,00,D4,8D,01
1086 DATA D4,A9,09,8D,05,D4,A9,0F
1087 DATA 8D,18,D4,60,20,A9,C2,A9
1088 DATA 81,20,DF,C2,A9,80,20,DF
1089 DATA C2,4C,D9,C2,20,A9,C2,A9
1090 DATA 11,20,DF,C2,A9,10,20,DF
1091 DATA C2,A9,00,8D,04,D4,60,8D
1092 DATA 04,D4,A2,70,A0,00,88,D0
1093 DATA FD,CA,D0,FA,60,END
```

END

```
5 TRAP 200
10 PRINT"[CLEAR]POKING -";
20 P=4864 :REM $1300  (END AT
   5545/$15A9)
30 READ A$:IF A$="END"THEN 110
80 PRINT"[HOME,RIGHT12]"P;
100 B=DEC(A$):POKE P,B:T=T+B:P=P+1
   :GOTO 30
110 IF T<>59382 THEN PRINT
   :PRINT"MISTAKE IN DATA --> CHECK
   DATA STATEMENTS":END
120 PRINT"DONE":END
200 PRINT:PRINT"DATA ERROR IN LINE";
   1000+INT((P-4864)/8):END
1000 DATA 4C,1E,13,4C,3A,13,00,00
1001 DATA 8E,00,F7,00,42,41,51,57
1002 DATA 0D,00,0D,43,08,14,0E,14
1003 DATA 16,14,26,14,33,14,A9,00
1004 DATA 8D,00,FF,AD,04,03,8D,12
1005 DATA 13,AD,05,03,8D,13,13,A2
1006 DATA 4A,A0,13,8E,04,03,8C,05
1007 DATA 03,60,AD,12,13,8D,04,03
1008 DATA AD,13,13,8D,05,03,60,6C
1009 DATA 12,13,A5,7F,D0,F9,AD,00
1010 DATA 02,20,5B,13,90,F1,A0,00
1011 DATA 4C,6F,14,C9,30,30,06,C9
1012 DATA 3A,10,02,38,60,18,60,C8
1013 DATA B1,3D,C9,20,D0,03,C8,D0
1014 DATA F7,B1,3D,60,18,C8,B1,3D
1015 DATA F0,35,C9,22,F0,F5,6D,06
1016 DATA 13,8D,06,13,AD,07,13,69
1017 DATA 00,8D,07,13,4C,75,13,18
1018 DATA 6D,08,13,8D,08,13,90,03
1019 DATA EE,09,13,EE,0C,13,60,18
1020 DATA 6D,0B,13,8D,0B,13,90,03
1021 DATA EE,0A,13,EE,0D,13,60,0A
1022 DATA A8,B9,14,13,85,FB,B9,15
1023 DATA 13,85,FC,A0,00,8C,00,FF
1024 DATA A9,12,20,D2,FF,B1,FB,F0
1025 DATA 06,20,D2,FF,C8,D0,F6,20
1026 DATA 79,15,20,A3,15,20,E4,FF
1027 DATA F0,FB,A0,1B,B9,EF,13,20
1028 DATA D2,FF,88,10,F7,68,68,A9
1029 DATA 00,8D,00,02,4C,B7,4D,91
1030 DATA 91,0D,20,20,20,20,20,20
1031 DATA 20,20,20,20,20,20,20,20
1032 DATA 20,20,20,20,20,20,91,0D
1033 DATA 51,55,4F,54,45,00,4B,45
1034 DATA 59,57,4F,52,44,00,23,20
1035 DATA 4F,46,20,43,48,41,52,41
1036 DATA 43,54,45,52,53,00,55,4E
1037 DATA 49,44,45,4E,54,49,46,49
1038 DATA 45,44,00,4E,4F,20,43,48
1039 DATA 45,43,4B,53,55,4D,00,C8
1040 DATA B1,3D,D0,FB,98,30,04,C9
1041 DATA 06,30,1E,88,88,88,88,88
1042 DATA B1,3D,C9,27,D0,13,A9,00
1043 DATA 91,3D,C8,A2,00,B1,3D,9D
1044 DATA 00,0B,C8,E8,E0,04,D0,F5
1045 DATA 60,4C,5C,15,4C,C5,14,A0
1046 DATA 09,A9,00,99,06,13,8D,00
1047 DATA 0B,88,10,F7,A9,80,85,FD
1048 DATA A0,00,20,3F,14,20,AE,14
1049 DATA 20,0D,43,84,FA,A0,FF,20
1050 DATA 67,13,F0,D8,24,FD,F0,06
1051 DATA 20,8F,13,4C,8F,14,C9,22
1052 DATA D0,06,20,74,13,4C,8F,14
1053 DATA 20,9F,13,4C,8F,14,A0,00
1054 DATA B9,00,02,20,5B,13,C8,90
1055 DATA 0A,18,6D,0A,13,8D,0A,13
1056 DATA 4C,B0,14,88,60,18,AD,0C
1057 DATA 13,69,41,8D,0C,13,38,AD
1058 DATA 0D,13,E9,19,90,06,8D,0D
1059 DATA 13,4C,CF,14,AD,0D,13,69
1060 DATA 41,8D,0D,13,AD,06,13,6D
1061 DATA 08,13,48,AD,07,13,6D,09
1062 DATA 13,8D,0F,13,68,6D,0B,13
1063 DATA 8D,0E,13,AD,0F,13,6D,0A
1064 DATA 13,8D,0F,13,38,E9,19,90
1065 DATA 06,8D,0F,13,4C,05,15,AD
1066 DATA 0F,13,69,41,8D,0F,13,AD
1067 DATA 0E,13,E9,19,90,06,8D,0E
1068 DATA 13,4C,1A,15,AD,0E,13,69
1069 DATA 41,8D,0E,13,A0,01,AD,0C
1070 DATA 13,CD,00,0B,D0,20,C8,AD
1071 DATA 0D,13,CD,01,0B,D0,17,C8
1072 DATA AD,0E,13,CD,02,0B,D0,0E
1073 DATA AD,0F,13,CD,03,0B,D0,06
1074 DATA 20,89,15,A4,FA,60,98,48
1075 DATA 68,4C,AF,13,A9,04,4C,AF
1076 DATA 13,A9,00,8D,00,FF,A9,20
1077 DATA 8D,00,D4,8D,01,D4,A9,09
1078 DATA 8D,05,D4,A9,0F,8D,18,D4
1079 DATA 60,20,61,15,A9,81,20,9C
1080 DATA 15,A9,80,20,9C,15,4C,96
1081 DATA 15,20,61,15,A9,11,20,9C
1082 DATA 15,A9,10,20,9C,15,A9,00
1083 DATA 8D,04,D4,60,8D,04,D4,A2
1084 DATA 70,A0,00,88,D0,FD,CA,D0
1085 DATA FA,60,END
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END

Continued from page 46

eventually be available for Nintendo.

Origin's latest release *Tangled Tales* is a novice-level, humorous fantasy utilizing dual windows, menus for character interaction with over 50 people, excellent art and an icon interface. By this fall, the 64 *Space Rogue* should be blasting off, and *Moebius II* should follow. Origin has also packaged *Ultima I, II* and *III* as an *Ultima Trilogy* that sells for $59.95.

Calling All Amiga Adventurers!

The Amiga version of *Zak McKracken and the Alien Mindbenders* was drawing crowds at the Lucasfilm booth and should be out by now. By summer they'll release an Indiana Jones adventure based on the third film in the series and using the *Zak* game system. Interplay president Brian Fargo showed me several interesting ways to get killed in the Amiga *Neuromancer*. *Dondra,* a novel and good-looking graphic adventure, finally made it to the Amiga—now that it's being marketed by MicroIllusions. Mindscape's *Deja Vu II: Lost in Las Vegas*, their latest icon-based adventure from ICOM Simulations, was up on the Mac and should be out for the Amiga by now. *Wizardry V* may be the first in the series to be converted for the Amiga, but Sir-Tech's plans remain tentative. The Amiga *Pool of Radiance* should have shipped by June. Though the Amiga versions weren't on display, Infocom plans versions of *BattleTech* or *Zork Zero* (the rumor that the sequel will be called *Zork Less Than Zero* has not been confirmed). Origin is working on an Amiga *Ultima V,* but no release date has been set.

Sierra's Mark Crowe and Scott Murphy blasted through a near-complete version of Sierra's *Space Quest III: The Pirates of Pestulon* (due for Amiga this summer). This time those "Two Guys from Andromeda" put themselves in the game: they've been kidnapped by ScumSoft and forced to design mindless arcade games like *Astro Chicken,* so your goal as Roger Wilco is to rescue them.

Al Lowe, the twisted mind behind the *Leisure Suit Larry* series was there to talk up the Amiga version of *Leisure Suit Larry II: Lookin' for Love in Several Wrong Places*. It's hardly as rude as the first game, and a clever sub-plot involving Russian KGB agents and a James Bond-style villain makes it a more well-rounded adventure. (Rumor has it his next game will be called *Polyester Patty.)*

Then I saw *Gold Rush,* the last of Sierra's games done in the old style (low-resolution graphics, at least compared to what was done with *King's Quest IV)*. It's a trip back to the Old West, as you head for California during the Gold Rush. By this time, however, I was ready for a trip back to my home in the Southwest—four days of being killed by Orcs, spun around by Spinners and blasted by Drip-dry Dragons will wear out even the hardiest adventurer.

Clues of the Month

A fast way to round up potions, scrolls, keys and so on in *Ultima V* is to watch the Armourer in Minoc at noon, then follow him to the tree where he hides five skull keys. If you get them, he'll replace them every day at the same time. Then head for the basement of Lord British's castle and open the southernmost door. Inside are three chests filled with useful items. Grab everything, leave the room and return. Everything in the chests will have been replaced, so you can grab more. Repeat these steps as often as desired. It will lower your Avatarhood points, however, which can be restored by entering a Shrine whose quest you have already completed, meditating for three cycles and offering 900 in gold (your Avatarhood goes up a level for each 900 gold you pay).

Next Month in Commodore Magazine

Activision: A Memorable Decade

Activision is celebrating its tenth anniversary this year. Can you remember the first game they released? (Hint: it was for the Atari 2600.) Here's a look at how this company has grown and changed.

Profitable Amiga Video

Can you actually make money using your Amiga for video? Read the story of two companies who are doing it. Also included is a comprehensive list of the software you'll need to get the job done.

SPECIAL

To help relieve the summer blahs we're increasing the number of reviews for July.

Available on newsstands June 20, 1989.

Continued from page 15

ships have very good anti-missile capabilities, and anyway, it takes more than one hit to sink them.
R.D. Moses
Snow Camp, NC

The Rocky Horror Show: It's pretty easy to re-deepfreeze Eddie. When he's about to thaw out, go into the freezer and climb the ladder with the red dot at the top. Press the button, go on to the next one, and so forth.
Trip Hosmer
Marblehead, MA

Seven Cities of Gold: It's best to look for the Lost City when your ships are fairly empty. That way, you have plenty of cargo space to store the gold.

Sail to the western coast of South America where Colombia meets the Panama Isthmus, approximately 50 North latitude. Then sail due west into the Pacific Ocean to the Isle of Cocos, where you will find the Lost City.

Take plenty of men and a few goods ashore to make a fort. The Chief will give you thousands in gold, but if you don't mark the Lost City's location with a Fort, it will disappear before you can remove all the gold.

When traveling with native bearers, stop frequently to rest. The natives may tell you where to find gold mines and their capital city, which also has lots of gold.
Evelyn Y. Hampton
Chicago, IL

Shadowgate: To get the platinum horn, either Operate it or take it and use the holy water on the hellhound that appears. To get the holy water, Operate the cracked stone in the floor of the laboratory with the large kettle of green stuff.

Use the silver arrow to kill the lady that turns into a werewolf. Now you can take the golden spike.

When you get past the Sphinx, go into the room with the telescope. Look carefully at the starmap, and take the starlike comet on it to destroy the Wyvern. Also, Operate the map and take the iron rod, which you should put in the flagstaff hole outside the castle Shadowgate. Weird, huh?

Want to get the flute in the acid fountain? Operate the well near the Cyclops, wear the gauntlet that's inside the bucket when you Open it, and take the flute. Put it in inventory, then Operate it.
Willi Magdamit
Port Orchard, WA

Strike Fleet: When fighting a large Russian surface group, choose a ship with many air-to-air missiles, preferably a cruiser or a frigate.

When fighting Russian cruisers, frigates or battleships, don't fire your missiles immediately, since the Russians will shoot them down. Instead, close in to 30–60 kilometers and shoot down any missiles aimed at you. When you get closer, fire your surface-to-surface missiles, five for each ship if possible. Save the more powerful Tomahawk missiles for the final blow.

To evade a torpedo, go immediately to maximum speed and set your sonar to passive. Then turn your bow or stern to the torpedo, turn off your turbines, and turn while coasting. This gives the torpedo nothing to home in on. Cross your fingers while waiting for the outcome.

Phalanx autocannons are more accurate if fired manually.

Sometimes a distant submarine can first be detected by radar when it surfaces or raises its periscope.

When escorting tankers into the gulf, bring a Perry frigate and two Pegasus hydrofoils. When you're attacked by two groups of four armed speedboats, break off one hydrofoil to each group; keep escorting the tankers with the frigate.

Use your guns when attacking speedboats, saving the Harpoons for the Silkworm launcher. When passing Kharg Island, be on the alert for Silkworms. As soon as you see one, look for its launcher and head for it at maximum speed. When a Silkworm enters your air-to-air missile range of about 30 kilometers, shoot it down but conserve your missiles. One per silkworm is best.

When you're close enough to the launcher, fire Harpoons one at a time until you hit it.
Vincent Maldia Dolores
San Fernando Pampanga, Philippines

Superstar Ice Hockey: If you're playing Center and get a breakaway, skate just a little below the center by the blue face-off circle in the offensive zone. This should make the goaltender come out. Wait until you have a good shot, then take it. You should score with little difficulty.
Mark Havinga
Fort Macleod, Alberta
Canada

Test Drive: If you choose the Lotus, I've found you'll reach more gas stations, but the Ferrari gives you the most points. Never use the Porsche. The Lamborghini and 'Vette are for beginners.
Derrick Taylor
Inglewood, CA

The Three Stooges: If you really want the stooges to marry the daughters, avoid the Question Mark and the Money Squares, and go for the Games!

With practice, the stooges can make over $600 per day. To stop Moe's hand on the icon, stare exclusively at it and remember that Moe will pass over that space at least twice. Finally, play the slapping game sparingly.
Joseph de Camara
West Berlin, NJ

Thunderchopper: If your direction finder is damaged, go to map mode. If your destination is north of the map, you'll be OK.

To rescue on land at night, use Infrared and look for bright yellow spots. They are the pilots.

In the mission where you guide trucks through the valley, use Infrared and look for bright yellow spots in the hills. They are the enemy; you should destroy them before they hit the convoy.
Uei-I Lei
Cicero, IL

Ultima V: To fix destroyed shrines, you must yell the correct word of power. The eight words of power are *Fallax, Vilis, Inopia, Malum, Avidus, Infama, Ignavus* and *Veramoor.*

Here are the mantras needed for the shrines:

Sacrifice = Cah	Honesty = Ahm
Honor = Summ	Justice = Beh
Valor = Ra	Spirituality = Om
Humility = Lum	Compassion = Mu

The yellow potion heals, the blue and purple potions cause sleep, and the green potion contains poison.
Jason Phlaum
La Quinta, CA

Usagi Yojimbo: In Levels 4 and 8, make sure you buy food from the lady. To find if a peasant is a Ninja, give him a Ryo. In his response, he will give away his identity. Doing this also improves your Karma. Level 7 is all Ninjas.
Derek Nittle
Springfield, VA

Wasteland: When low on Constitution, go into the deepest part of the desert to recover. Nobody will bother you out there while you are healing. But be sure to bring plenty of water!

Be careful of diseases and radiation sickness, as doctors are expensive and your medical skills only work for wounds. Radiation suits are worth their weight in gold.
David C. Pugh
Clemmons, NC

World Class Leader Board: The punch shot is the most needed trouble shot in the game. Unfortunately, it's not provided with the original course disk, but only on the extra course disks.

Here's how to use the punch shot with your original course disk: First, load Side A of an extra course that has the punch shot. When the computer prompts you to insert the other side of the disk, simply insert Side B of the original course disk. The punch shot will be available throughout the disk.
Timothy M. Carr
Gaithersburg, MD

Xyphus: To get past the werewolves in level one, keep all your characters in the fort, except for an elf. Use the elf to lure the werewolves close to the fort, where your other characters can both fight and get healed.

In level three, you can cross the river at its widest point.
David Victor
Waukegan, IL

Z-Pilot: When warping from level one or two to the next level, you can skip that level by holding your stick diagonally with the fire button pressed. Do it when you begin to warp and when the warp to the next level is completed.
Omar Khan
Petersburg, VA

Zak McKracken: There are strange markings on one of the legs, which if connected properly will open a secret door.

To open the door, obtain the Blue Crystal and use one of your friends on Mars to go to the Great Chamber. In the Chamber is a statue with strange horizontal markings upon it. Have Zak draw these markings vertically and the door will open.
Basil Ansari
Bradford, Ontario
Canada

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